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The impact of board heterogeneity on corporate internationalization strategy

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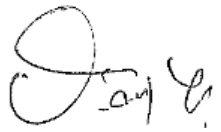
2022

I hereby declare that this DBA dissertation is my original work, and it has been written by me in its entirety. I have duly acknowledged all the sources of information which has been used in this DBA dissertation.

This DBA dissertation has also not been submitted for any degree in any university previously.



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Qiang Yi
14 Nov 2022

The Impact of Board Heterogeneity on Corporate Internationalization Strategy

Qiang Yi

Abstract

This study analyzes the relationship between board heterogeneity and the company's internationalization strategy to determine the internal mechanism through which board heterogeneity affects the company's internationalization strategy. Based on the analysis of the primary effect, the moderating effects of contextual factors at various levels, such as individual, organization, and environment, are introduced. Subsequently, this study empirically tests the proposed research hypothesis using the data of Chinese listed companies from 2011 to 2020.

The empirical results indicate that board heterogeneity has a positive impact on the company's internationalization strategy. When the board chairman is female or has a longer tenure, board heterogeneity plays a more crucial role in promoting the company's internationalization strategy. Board heterogeneity has a greater impact on the internationalization strategy of companies that have more abundant resources and are owned by the state. The higher the dynamics of the external environment and the higher the degree of marketization, the more significant the role of the heterogeneity of the board of directors in promoting the company's internationalization strategy. Even after modifying the variables' measurement methods and the regression technique, the conclusions of this research remain robust. Further tests show that board heterogeneity enhances the company's internationalization strategy by improving its risk-taking level. The heterogeneity of the board of directors enhances company value by promoting the implementation of the company's internationalization strategy. Relationship heterogeneity and task

heterogeneity within the board have diverse effects on the company's internationalization strategy. Compared with relationship heterogeneity, task heterogeneity is the main reason for the company's implementation of the internationalization strategy.

The study findings have several theoretical contributions. First, this study contributes to the literature on economic consequences of board heterogeneity by deeply analyzing the impact of board heterogeneity on the company's internationalization strategy. Second, this study identifies board heterogeneity as an important factor influencing internationalization strategy from the perspective of business practice, thereby enriching related research on the factors influencing internationalization strategy. Third, this study deepens the understanding of the role of the board of directors through theoretical analysis and empirical tests regarding how different levels of factors moderate the relationship between board heterogeneity and the company's internationalization strategy.

In addition, the research findings have some practical implications. First, companies that plan to or have already begun implementing internationalization strategies can avoid the risks associated with international competition. They can do so by building a heterogeneous board of directors and utilizing the information and resources provided by the differences among board members in terms of gender, age, education level, professional background, tenure, and so on. Second, while improving the structure of the board of directors, we must also consider the impact of individual, organizational, and environmental factors. Third, companies that intend to develop international markets and implement internationalization strategies should maximize the positive role of board heterogeneity, which will help enhance the company's value.

KEYWORDS: Board heterogeneity, Internationalization strategy, Risk-taking, Chinese company

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Acknowledgment

Time flies like a white horse passing a gap. The three-year DBA doctoral program is coming to an end. As I complete my doctoral dissertation, I would like to express my heartfelt gratitude to the professors, teachers, and friends who have helped and supported me.

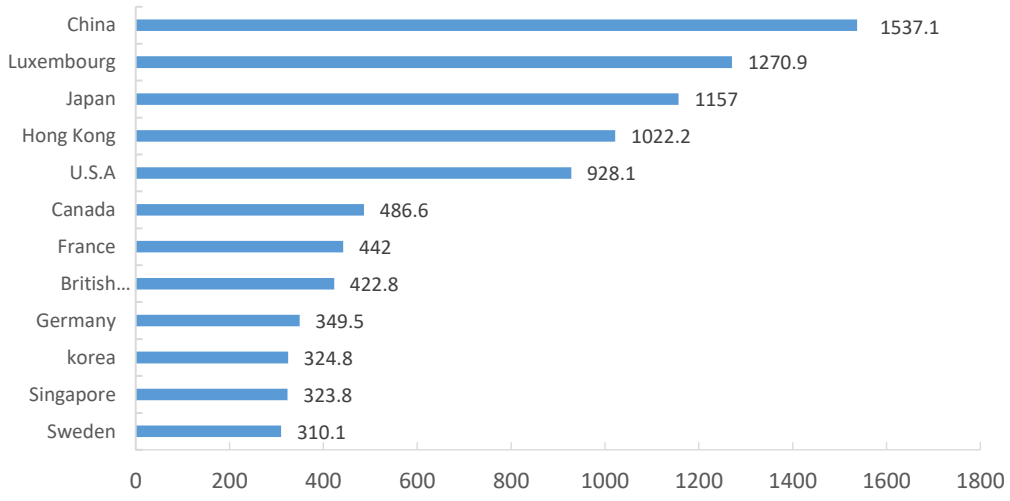
Chapter 1 Introduction

Research Background

As global economic integration continues and China launches the Belt and Road Initiative, an increasing number of Chinese companies begin actively launching overseas operations, seeking global resources to build a sustainable competitive advantage in a complex market environment. Statistics show that China's outward direct investment totaled US$153.7 billion in 2020, accounting for 20.2% of total global investment volume, ranking first worldwide (See Figure 1).

Figure 1

Flow comparison between China and major countries (regions) in the world in 2020 (unit: US$100 million)

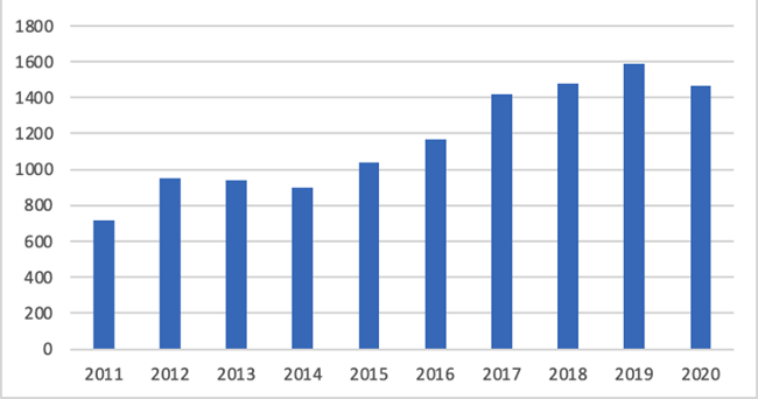


At the micro level of enterprises, Chinese companies are the main vehicle of Chinese culture and economy, and their overseas operations are thus important

for boosting the influence of the Chinese economy, politics, and culture. From the frequent overseas acquisitions by China National Offshore Oil Corporation to Lenovo's acquisition of IBM's server business, the implication is clear: Chinese companies are gaining more market share in the global market, and an increasing number of them need to implement an international strategy to enter overseas markets. Furthermore, they are seeking developmental and competitive advantages by utilizing this platform to allocate resources and compete with others' products. Figure 2 depicts the international operations of China's listed companies over time. Since 2011, there has been a nearly two-fold increase, from 718 in 2011 to 1,589 in 2019. Despite the coronavirus pandemic that has struck some listed companies' overseas operations, over 1,400 of them continue to conduct business overseas.

Figure 2

Number of listed companies participating in international operation from 2011 to 2020



A general review of previous studies finds that research on the impact of companies' international strategy focuses on macroenvironmental factors and company characteristics. Regarding macroenvironmental factors, Makino, Lau and

Yeh (2002) proposed that emerging economies, due to the disadvantages of their home countries' institutional backgrounds, need to accumulate more implicit information and resources in overseas operations than others. Rodríguez (2002) found that the international pattern of hotel companies is concerned with the home country's economic development, cultural differences, political and economic risks, and the foreign investment. Meanwhile, Gerpott and Jakopin (2007) pointed out that the host country's economic and political uncertainties, regulation strictness, competitive intensity, and companies' geological and cultural distance have a significant impact on companies' internationalization efforts. Dowell and Killaly (2009) examined how the frequency, degree, and unpredictability of the target market's changing demands influence internationalization and found a negative correlation between the degree and frequency of the demands and the international level of companies. Desbordes and Wei (2017) stressed that the host country's financial development is instrumental to multinational companies' overseas operations. Meanwhile, according to Rao-Nicholson and Khan (2017), the institutional distance between the home and host countries' disadvantages, deprive them of legitimacy in the host country.

Regarding company characteristics, Capar and Kotabe (2003) examined German service companies and discovered that, unlike the manufacturing industry, the service industry shows a U-shaped relationship between internationalization and performance based on the particularities of its resources and performance. Meanwhile, Hitt, Bierman, Uhlenbruck and Shimizu (2006) discovered that human capital and relational capital play an important role in law firms going global.

According to Elango and Pattnaik (2007), companies typically gain experience implementing international strategy from their parent companies and international networks. Similarly, Guler and Guillen (2010) found that the frequency with which companies enter the global market, as well as their share of it, is determined by their advantage in having a larger social network in their home countries. Manolova, Manev and Gyoshev (2010) confirmed the importance of social network resources in the internationalization of small- and medium-sized companies. Moreover, Ibeh and Kasem (2011) stated that although social network resources are influential in the early stages of these companies' internationalization, that influence is replaced in the later stages by the resources that these companies own from the very beginning. Wang, Hong, Kafouros and Wright (2012) highlighted the significance of intangible resources in the companies' international development. Companies with more technical resources are more capable of integrating and utilizing existing technologies to earn considerable profits in the global market.

The above literature on international influencing factors provides references for understanding the implementation of a company's international strategy. Nevertheless, several important questions remain unanswered. For example, a company's managerial hierarchy and mechanism, with its board at the center, should play a significant role in its international operation, which is also a critical strategic decision for a company (Gillan, 2006). According to the classic structure–conduct–performance paradigm, the structure of a board influences its daily operation, thereby influencing decision-making effects. However, existing research on the influencing factors of internationalization rarely explores this area,

particularly the impact of heterogeneity among board members on companies' international strategy. A company's board of directors plays an important role in strategic decision-making. The members' experiences, values, and characteristics shape their perception of external environments and influence a company's strategies and performance. Furthermore, such heterogeneity in terms of gender, age, tenure, educational background, and career has a significant impact on a company's overseas operations. Therefore, this study is centered on the influence of board heterogeneity on the level of internationalization of Chinese companies.

Board heterogeneity is a crucial topic in corporate management research, and many fruitful studies have been conducted in this area. However, the majority of them focus on gender and race; education, career, and age structure are all overlooked in the research. Furthermore, few extensively discuss the impact of board heterogeneity on companies' international strategy. Accordingly, this study explores the gender and age heterogeneity of board members first. It then considers whether degree, career, and tenure heterogeneity among board members can influence companies' international strategy, with the goal of determining the mechanism by which such influence occurs. Moreover, this study examines how a company's internal and external managerial mechanisms, including individual, organizational, and environmental factors, moderate the relationship between board heterogeneity and international strategy. Finally, it analyzes how board heterogeneity affects a company's performance through international strategy.

Major Concepts

This study focuses on two concepts: board heterogeneity and company international strategy. Board heterogeneity refers to the differences among board members in different dimensions. This study first quantifies board heterogeneity in terms of gender, age, educational background, career, and tenure. Then it adds them all up to obtain a board's overall heterogeneity. Companies' international strategy refers to the level of participation in overseas operations.

Research Significance

This study provides both theoretical and practical significance.

In terms of theoretical significance, it first adds to the body of knowledge on the economic consequences of board heterogeneity. Current studies in this field have analyzed the impact of board heterogeneity on corporate performance and behavior, including financial and social performance, innovation strategies, risk-taking capabilities, and stock price changes, but only a few have examined its impact on international strategy. This study contributes to the research on the economic consequences of board heterogeneity by thoroughly analyzing this area. Second, this study adds to the body of knowledge on the factors that influence international strategy. As previously stated, although many studies have been conducted in this area, their focus is on environmental and corporate factors, whereas corporate managerial characteristics, particularly board characteristics, are largely ignored. With a practical perspective, this study demonstrates that board heterogeneity is an important factor in international strategy. Third, it further discusses the differences of such impact at the individual, organizational, and

environmental levels. Theoretical and empirical testing on how different factors moderate the relationship between board heterogeneity and companies' international strategy contribute to a better understanding of the board's role.

In terms of practical significance, the findings of this study help understand how companies efficiently design board structures to implement international strategy and match board members' characteristics. It demonstrates how a board with high heterogeneity can gather information and resources, improve its and the company's risk-taking capability, and promote the implementation of international strategy. As a result, companies with a high level of internationalization should efficiently design board structures to improve decision-making. Second, these findings can help companies dynamically adjust their board structure based on internal and external characteristics, prompting them to make more efficient decisions in their overseas operations. The impact of board heterogeneity on international strategy varies depending on internal and external factors at various levels. Therefore, companies should dynamically adjust board structure in response to changing circumstances to ensure sound decision-making.

Research Strategy and Method

Research Strategy

This study proposes research questions and reviews previous literature on board heterogeneity based on the reality of Chinese companies' internationalization. Accordingly, it proposes research hypotheses and begins the research design under the supervision of the research framework. This study examines the data through

statistical analysis, verifies the research hypotheses through analysis results, and concludes through sample selection and data searching.

Research Method

This study's theoretical research is based on documentary research. Theoretical deduction is used to determine the relationship between variables, and descriptive statistics, correlation analysis, and regression analysis are used for empirical analysis.

Documentary research

Documentary research refers to the systematic collection of relevant literature. It clarifies the development of a specific research field and aids in the identification of new areas for investigation, thereby determining research orientation and contribution. In this study, the author employs this method to review relevant studies on the economic consequences of board heterogeneity and the influencing factors of international strategy published in the top international journals of management studies. This not only provides a solid theoretical foundation for this study, but also sets it apart from previous research.

Normative analysis

The normative analysis consists of two parts: induction and deduction. Induction is the discovery of universal laws from new phenomena in practice, whereas deduction is the inference of specific relationships among variables from the logic underlying mature theories. Based on previous research, this study employs deduction to find the relationship among board heterogeneity, international strategy, and situation factors at various levels.

Empirical analysis

This study develops several research hypotheses by analyzing the relation among board heterogeneity, international strategy, and situational factors at the individual, organizational, and environmental levels using theoretical models based on existing literature and theoretical deduction. Subsequently, empirical research is designed using existing research, including sample selection, variable selection, model building. With these models and research variables, this study then selects data from A-share listed companies on the Shanghai and Shenzhen stock exchanges from 2011 to 2020 and employs methods such as descriptive, correlation, and multiple regression analyses. These data and methods aid in examining the relationships among the variables in the theoretical model, thereby validating its rationality.

Research Content and Technical Route

Research Content

The research content of this study consists of four parts.

First, a systematic review of existing research on the influencing factors of board heterogeneity, its impact on corporate performance, social performance, and corporate strategy and behavior both at home and abroad, is conducted. It provides strong support for developing this study's theoretical model and deducing its research hypotheses. Furthermore, it emphasizes its differences from previous research.

Second, using organizational theories, such as upper echelon theory and resource-based view and relevant literature, the relation among different variables

is logically deduced, and the theoretical model is built to include variables such as board heterogeneity, international strategy, and situational factors at various levels. The upper echelon theory and the resource-based view posit that the heterogeneity of a board can bring more information and resources to its decision-making than others, thus enhancing its risk-taking capability and assisting in the implementation of an international strategy. Besides, an analysis of board heterogeneity's influence on international strategy is conducted under different situations, in order to uncover the mechanism of such influence. From the open systematic perspective of organization theory, this study focuses situational factors that are both internal and external. It chooses the individual, the organization, and the environment as influencing factors. Individually, the gender and tenure of the board chairman influence how he or she uses board heterogeneity, thereby affecting the relationship between such heterogeneity and a company's international strategy. Slack resources also play a role in this relationship at the organizational level, as they are required for companies to implement such a strategy. Meanwhile, the effectiveness of companies' managerial mechanisms varies between state-owned enterprises (SOEs) and private enterprises, implying that ownership has an impact on this relationship. Environmental uncertainty and marketization, which represent the competitive and institutional environments, respectively, can influence board heterogeneity and its relationship with international strategy. Moreover, this study explores deeper into two issues. First, it divides board heterogeneity into task-related heterogeneity (concerning educational background, occupational background, tenure, and director type) and non-task-related heterogeneity

(concerning demographic characteristics such as gender, age, and nationality). It seeks to find the differences between them in terms of the impact of companies' international strategies. This division also aids in understanding board structure. Second, it discusses the impact of such strategy on corporate performance, establishing a theoretical framework among board heterogeneity, international strategy, and corporate performance.

Third, empirical testing is used to examine the impact of board heterogeneity on international strategy and the moderating effects of the three situational factors. To conduct application analysis at the micro level of enterprises, Chinese listed companies are chosen as the sample for analysis. It consists of three parts. The first section includes empirical and regression companies of board heterogeneity and company international strategy. It combines the research hypotheses of the relationship between the two and the regression model in the research design to conduct empirical analysis to validate the theoretical model's hypotheses. The second component is the robustness test. This part analyzes the stability of the model's regression results under different conditions in four aspects to ensure the robustness of the results of empirical and regression analysis. The third part discusses the empirical research results and makes management recommendations based on them.

Fourth, an empirical test is used to examine the impact of diversification strategy on corporate value and other factors influencing this relationship. In this case, Chinese listed companies are also chosen as a sample for analysis to conduct application analysis at the micro level of enterprises. The analysis is divided into

four parts. The first part is the empirical and regression analyses of the relation between diversification strategy and corporate value. It first combines the hypotheses proposed in the theoretical model, which addresses how diversification strategy influences corporate value in various situations, and the regression model in the research design, and then conducts empirical analysis to validate the theoretical model's hypotheses. The second component is the robustness test. Different methods of this test are used to examine the relationship between board heterogeneity and international strategy to ensure the stability of the results of the regression model. The third section investigates the effect of different types of heterogeneity and international strategy on corporate performance.

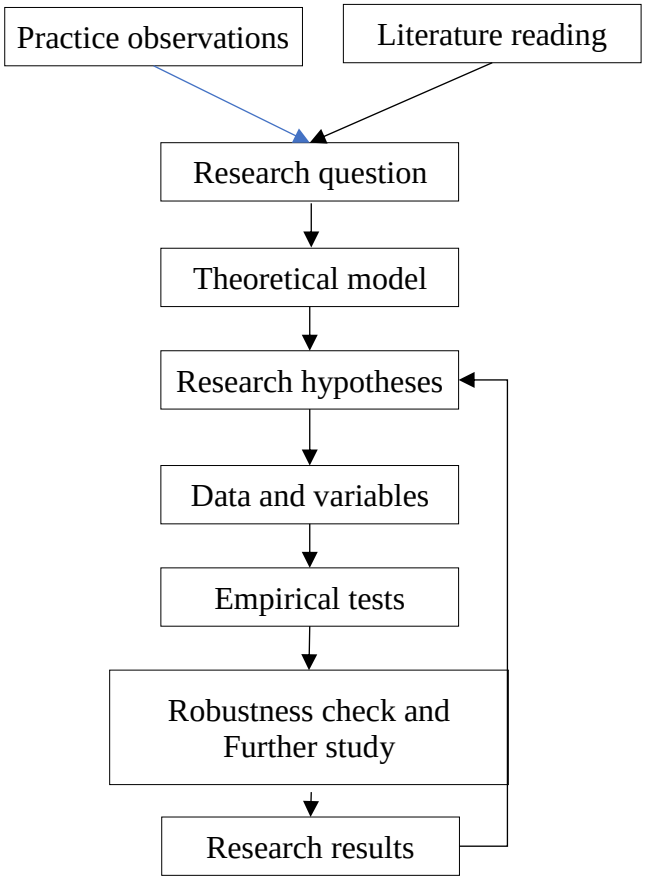
Technical Route

This study concentrates on how board heterogeneity affects the company's international strategy. It reveals the mechanism of this influence in affecting corporate performance through theoretical analysis and discusses the moderating effects of various situational factors. Figure 3 demonstrates the technical path of this study. First, the research direction is determined by observing Chinese companies' internationalization and reviewing relevant literature. Second, specific problems in the field of study are raised, and relevant literature is gathered for analysis. Third, the theoretical framework of this study is established based on the most recent research progress at home and abroad, and the research hypotheses are proposed in accordance with the framework. Fourth, the research is well-planned in relation to the hypotheses. Relevant data are collected and statistically processed

by software, and relevant hypotheses are tested empirically. Finally, a conclusion is reached regarding the research questions and hypotheses.

Figure 3

Technical route



Chapter 2 Literature Review

Board heterogeneity refers to board members' differences in race, age, gender, professional background, personality, emotional state, and values. In light of the availability of data on directors, scholars have explored the factors influencing board heterogeneity and its impact on corporate performance, social performance, corporate strategies, and finance.

Research on the Factors Influencing Board Heterogeneity

In terms of the influence of board heterogeneity, scholars have explored the impact that the board size, industry type, and external institutional environment. Brammer, Millington and Pavelin (2007) found huge gaps in gender heterogeneity across different sectors in their survey on gender and racial heterogeneity among British board of directors, but there was little variation in racial diversity. Kang, Cheng and Gray (2007) examined board heterogeneity in Australian companies and found that board size, industry type, and equity concentration degree were the main factors affecting board heterogeneity. For instance, the larger the board size and the lower the equity concentration degree, the higher the board heterogeneity. Simultaneously, board heterogeneity varied significantly across industries. After comparing the nationality heterogeneity of board members in the Netherlands, Britain, and Germany, Van Veen and Elbertsen (2008) found that Britain had the highest nationality heterogeneity among their board members, whereas Germany had the lowest. The authors considered the difference caused by differences in corporate governance. Furthermore, the authors found that the company's internationalization strategy, size, and the number of mergers and acquisitions

(M&A) activities were all influencing factors in the national heterogeneity of board members. According to Nekhili and Gatfaoui (2013), what had an impact on board gender heterogeneity was the appointment of more female directors in companies with a high shareholding ratio of minority shareholders and family businesses. Furthermore, institutional ownership and management shareholding were related to the number of women on boards. Du (2016) investigated the impact of traditional culture on board gender heterogeneity, using data from China's listed companies to discover that companies that value Confucianism have more female directors on their boards. Farag and Mallin (2016) conducted research on the relationship between state ownership and board gender heterogeneity, concluding that the greater the proportion of state ownership in a company, the lower the percentage of women on the board. Saeed, Yousaf and Alharbi (2017) explored the impact of family and state ownership on board gender heterogeneity in emerging economies. Based on data from China and India, the research found that family ownership and state ownership in companies left a negative imprint on the proportion of female directors. Later, Saeed, Sameer, Raziq, Salman and Hammoudeh (2019) examined the factors influencing board gender heterogeneity in Indian companies, and they found that the number of female directors was positively related to company size and family ownership. Oyotode-Adebile and Ujah (2021) found how social capital influenced board gender heterogeneity, measuring regional social capital through trust and social networks and discovering that companies in high-social-capital areas had higher board gender heterogeneity. Pena-Martel, Perez-Aleman, and Santana-Martín (2022) discussed the impact of media coverage on gender

heterogeneity on board. The analysis of data from non-financial listed companies in Spain revealed that media coverage had a positive impact on board gender heterogeneity.

Research on the Influence of Board Heterogeneity on Corporate Performance

An enormous body of literature explores how board heterogeneity affects corporate performance. Scholars conducted research on the impact in different economies using data from various countries, but no consensus was reached. Proponents of board heterogeneity believe it has a positive impact on corporate performance because it provides the board of directors with a unique perspective. In this end, boards with a high degree of heterogeneity will share more information and are more likely to make sound decisions. Furthermore, heterogeneity strengthens the board's intellectual independence, allowing it to better perform its oversight duties for improved corporate performance. The following works are excellent examples. Miller and Triana (2009) investigated how racial heterogeneity of the board impacts corporate performance. The study found that racial heterogeneity improved companies' reputation and facilitates innovation, both of which contribute to improved corporate performance. Harris (2014) examined the impact of board heterogeneity on organizational performance in non-profit organizations and found a positive relationship. Hutchinson, Mack and Plastow (2015) analyzed the impact of board gender heterogeneity on corporate financial performance and found that board gender diversity helped reduce corporate risks and improve financial performance. Low, Roberts and Whiting (2015) examined the impact of female directors on corporate performance using company samples

from diverse economies, including Hong Kong, South Korea, Malaysia, and Singapore, and discovered that board gender heterogeneity was conducive to better corporate performance. After making research on the impact on enterprise value left by board gender heterogeneity, Kim and Starks (2016) found that female directors could provide great depth of expertise and unique techniques, improving the company's efficiency of counseling and enterprise value. Gray and Nowland (2017) explored the impact of board expertise heterogeneity on enterprise value in Australian companies. The study discovered that when board members were highly heterogeneous in terms of accountants, bankers, consultants, lawyers, and external CEOs, the company's enterprise value increased significantly. Reguera-Alvarado, de Fuentes and Laffarga (2017) researched the impact of board gender heterogeneity on corporate financial performance with data from Spanish listed companies. The survey found that the company's profit increased in tandem with the increase in the number of female directors. Galbreath (2018) also probed into the influence of board gender heterogeneity on corporate performance, discovering that gender heterogeneity could significantly improve performance in this area and that corporate social responsibility (CSR) acted as a bridge between them. Li and Chen (2018) explored the impact of board gender heterogeneity on corporate performance in Chinese listed companies and found that it had a positive effect. Sarhan, Ntim and Al-Najjar (2019) examined the impact of board heterogeneity on financial performance in Middle Eastern and North African countries. It turned out that board gender and nationality heterogeneity had a positive impact on corporate financial performance, particularly in well-managed companies. Dang, Houanti,

Reddy and Simioni (2020) investigated the relationship between board gender heterogeneity and corporate profitability with control function and showed that it was significantly positive. Othmani (2021) surveyed the impact of board gender heterogeneity on bank performance in Tunisian countries, and the study found that board gender heterogeneity was proportional to corporate profitability. Meanwhile and Ozdemir (2020) discussed the impact of board heterogeneity on the financial performance of publicly traded tourism companies in the US The study found that board heterogeneity had a significantly positive correlation with corporate financial performance. Furthermore, this relationship was influenced by institutional ownership. For example, when tourism companies have lower institutional ownership in their ownership structure, board heterogeneity may have a greater impact on financial performance.

Despite ample evidence supporting a positive relationship between board heterogeneity and corporate performance, some scholars contended that heterogeneity may have no effect on board performance or even result in worse corporate performance. It was due to the fact that heterogeneity may result in higher decision costs for the board and increase in the likelihood of conflict and factionalism in the team, resulting in poorer performance. For example, Carter, D'Souza, Simkins and Simpson (2010) studied board gender and ethnic heterogeneity and found no significant positive or negative relationship between corporate financial performance and the two types of heterogeneity. The authors argued that the impact of gender and ethnic heterogeneity on corporate performance varies with time and context, which could be explained by the contingency theory.

Ahern and Dittmar (2012) found that board gender heterogeneity led to a decline in corporate financial performance as regulators set a limit on the number of female directors. As a result, the board may appoint inexperienced members, leading to poor performance. Similarly, Chapple and Humphrey (2014) explored the impact of board gender heterogeneity on corporate performance in Australian listed companies, concluding that board gender heterogeneity was not significantly related to corporate performance in general. Shehata, Salhin and El-Helaly (2017) examined the impact of board heterogeneity on corporate performance in SMEs in Britain and found a significant negative relationship between board gender and age heterogeneity and corporate performance in SMEs. Wang (2020) conducted research in Taiwan on the impact of board gender heterogeneity on corporate performance. The study indicated that increased board gender heterogeneity in Taiwanese listed companies had no positive impact on their financial and governance performance; instead, the number of female independent directors had a positive correlation with their performance.

Moreover, it was held that board heterogeneity did not simply correlate linearly with corporate performance; rather, the two may have a non-linear relationship. Ararat, Aksu and Cetin (2015) investigated the impact of board demographic heterogeneity on corporate performance in emerging markets such as Turkey and found an inverted U-shaped relationship between board demographic heterogeneity and corporate performance. Ali, Ng and Kulik (2014) showed the impact of board age and gender heterogeneity on organizational performance in large Australian organizations, finding that board gender heterogeneity

significantly increased employee productivity and that age heterogeneity had an inverted U-shaped relationship with return on assets. Owen and Temesvary (2018) surveyed the impact of board gender heterogeneity on bank performance and concluded a threshold for this type of impact. When the number of female directors exceeded the threshold, gender heterogeneity would significantly enhance bank performance. Brahma, Nwafor and Boateng (2021) investigated the impact of board gender heterogeneity on corporate performance in British companies, finding a notable and positive relationship between board gender heterogeneity and corporate performance. Meanwhile, the study showed that appointing three or more women to the board was more important and clearer than appointing two or fewer women. Chijoke-Mgbame, Boateng and Mgbame (2020) leveraged data from Nigeria to show that gender heterogeneity on corporate boards had a positive and significant impact on financial performance. At the same time, the study showed that gender heterogeneity had a greater impact on performance in companies with two or more female directors. This demonstrated that having a sufficient number of female directors could improve financial performance in corporations. Meanwhile, Tleubayev, Bobojonov, Gagalyuk and Glauben (2020) explored the impact of board gender heterogeneity on corporate performance in Russia's agri-food industry, suggesting that the proportion of female directors on boards correlated positively with corporate performance. Moreover, boards with three or more female directors had a greater impact on corporate performance than those with two or fewer female directors.

Research on the Influence of Board Heterogeneity on Corporate Social Performance

Scholars are particularly interested in the impact of board heterogeneity on corporate social performance, in addition to corporate financial performance. A large number of studies explore the impact of board heterogeneity on social performance, such as CSR, environmental, social, and governance (ESG) disclosure, and carbon disclosure. Boulouta (2013) examined the impact of board gender heterogeneity on corporate social performance, concluding that female directors provided diverse observations to address issues related to the company's social responsibilities and the needs of stakeholders for improved performance in this area. Ferrero-Ferrero, Fernández-Izquierdo and Muñoz-Torres (2015) examined the impact of board age heterogeneity on CSR performance and argued that board age heterogeneity was part of good corporate governance guidelines, contributing to corporate sustainable development. Harjoto, Laksmana and Lee (2015) investigated the impact of board heterogeneity on CSR performance. The survey found that board gender heterogeneity, tenure heterogeneity, and expertise heterogeneity are driving forces of CSR, and board heterogeneity promotes CSR performance by improving CSR competitiveness and reducing related problems. Al-Shaer and Zaman (2016) explored the link between board heterogeneity and CSR. According to the study, board gender heterogeneity would significantly improve the quality of corporate reporting on sustainable development if corporate governance, corporate reporting incentives, reporting behavior, and reporting environment remained constant. Cabeza - García, Fernández - Gago and Nieto

(2018) examined the impact of board gender heterogeneity on CSR reporting and found that the higher the proportion of female directors on the board, the more comprehensive the CSR information disclosure. This type of relationship occurred only when the board had more than three female directors. Lu and Herremans (2019) probed into the impact of board gender heterogeneity on environmental performance. Board gender heterogeneity remarkably increased a company's score in environmental performance in sectors highly affected by the environment. Al-Qahtani and Elgharbawy (2020) surveyed the influence of board heterogeneity on corporate disclosure of greenhouse gas (GHG) information and found that the presence of female directors on the board had a positive impact on GHG disclosure and management. In contrast, boards with a high proportion of financial and industry background had a negative impact on GHG data. Furthermore, board tenure heterogeneity had no effect on GHG data. Peng, Yang, Shao and Li (2021) discussed the impact of board heterogeneity on CSR information disclosure in multinational companies, concluding that board gender heterogeneity had a positive influence on information disclosure of the company's environment and social information disclosure, and tenure heterogeneity had a positive influence on information disclosure of the company's environment. Shakil, Tasnia and Mostafiz (2020) studied the impact of board gender heterogeneity on bank ESG performance and found a significant positive relationship between board gender heterogeneity and US bank ESG performance.

Furthermore, academics present extensive empirical evidence on the relationship between board heterogeneity and social performance in various

economies. Ben-Amar, Chang and McIlkenny (2017) analyzed the relationship between board gender heterogeneity and carbon disclosure with data from Canadian companies. They found that an increasing proportion of women on the board increased the likelihood of voluntary carbon disclosure. Cucari, Esposito de Falco and Orlando (2018) explored the impact of board heterogeneity on ESG disclosure in Italian publicly traded companies and discovered a negative relationship between the number of female directors and ESG disclosure. Hoang, Abeysekera and Ma (2018) investigated the impact of board heterogeneity on CSR disclosure in Vietnamese listed companies and found that board heterogeneity can significantly improve CSR disclosure. Using data from Chinese listed companies, Gulzar, Cherian, Hwang, Jiang and Sial (2019) investigated the impact of board gender heterogeneity on corporate engagement in social responsibility and discovered that the higher the proportion of female directors on the board, the more active the corporate engagement in social responsibility. Issa and Fang (2019) studied the impact of board gender heterogeneity on CSR disclosure in Arab Gulf states, concluding that the overall number of female directors was positively correlated with the degree of CSR disclosure. Katmon, Mohamad, Norwani and Farooque (2019) investigated the impact of board heterogeneity on CSR disclosure in Malaysia and found that the board's education level and tenure heterogeneity had a significant positive impact on CSR disclosure. Khan, Khan and Saeed (2019) explored the impact of board heterogeneity on the quality of CSR disclosure in Pakistan and found that board gender, nationality, and tenure heterogeneity could significantly improve CSR disclosure quality while educational background

heterogeneity decreased it. Beji, Yousfi, Loukil and Omri (2021) discussed the relationship between board heterogeneity and CSR in French companies and concluded that board gender heterogeneity was proportional to the corporate governance dimension, and age heterogeneity was proportional to the corporate governance, human resources, human rights, and environmental activities. Orazalin and Baydauletov (2020) examined the impact of board gender heterogeneity in European publicly traded companies. According to the findings, board gender heterogeneity was positively related to environmental and social performance, lending credence to the study that board gender heterogeneity could facilitate sustainable development. Song, Yoon and Kang (2020) studied the influence of board heterogeneity on corporate performance in the hospitality sector, discovering that board gender heterogeneity had a significant positive impact on corporate performance, whereas age heterogeneity had little impact. Tingbani, Chithambo, Tauringana and Papanikolaou (2020) analyzed the impact of board gender heterogeneity on GHG emissions disclosure and discovered a strong positive relationship between voluntary GHG emissions disclosure and gender heterogeneity. Wasiuzzaman and Wan Mohammad (2020) examined the impact of board gender diversity on ESG disclosure in Malaysian companies. On the basis of the study, there would be a remarkable increase in the score of ESG disclosure, as well as a rising proportion of female directors.

Research on the Influence of Board Heterogeneity on Corporate Strategies and Behavior

A large number of studies examine the impact of board heterogeneity on corporate financial performance and CSR, as well as the impact of board heterogeneity on corporate innovation strategies, corporate risk, corporate finance, and so on.

In terms of corporate innovation, Galia and Zenou (2012) explored the impact of board gender and age heterogeneity on corporate innovation. It was found that board gender heterogeneity could boost corporate marketing and organizational innovation, and board age heterogeneity could boost corporate product, marketing, and organizational innovation. Zhou and Li (2012) investigated how board cognitive heterogeneity affected corporate innovation strategies and came to the conclusion that cognitive heterogeneity based on directors' functional backgrounds, industry backgrounds, and educational attainment formed group cognitive heterogeneity and boosted corporate innovation strategies. Based on data from 472 multinational corporations in 21 emerging economies, Attah-Boakye, Adams, Kimani and Ullah (2020) studied the relationship between board gender heterogeneity and corporate innovation and found that board heterogeneity was positively correlated with corporate innovation. Griffin, Li and Xu (2021) delved into the impact of board gender heterogeneity on corporate innovation and found that companies with heterogeneous boards in gender had more patents, more novel patents, and higher innovation efficiency. Furthermore, mechanism tests suggested that board gender diversity was associated with greater tolerance for failure, long-

term CEO incentives, and a more innovative corporate culture. Khan, Khidmat and Awan (2021) studied the impact of board heterogeneity on corporate innovation in Chinese listed companies. Their research showed that board gender and tenure heterogeneity could significantly boost corporate innovation, whereas nationality heterogeneity had no impact on innovation. They also found that corporate financial flexibility boosted the positive impact of board diversity on corporate innovation. Li and He (2021) explored the impact of board heterogeneity on corporate innovation, looking at the impact of heterogeneity in demographic characteristics such as gender and age, as well as heterogeneity in cognitive characteristics such as educational background, expertise, tenure, and breadth of board experience. The study found that board cognitive heterogeneity has a positive impact on corporate innovation, and introduction and motivation of high-tech talent are two channels through which board heterogeneity affects corporate innovation.

In terms of corporate risks, Loukil and Yousfi (2016) examined the impact of board gender heterogeneity on company risk-taking and found a risk-averse tendency in their performance, which would increase the company's cash ratio. Based on the contingency theory, Saeed, Mukarram and Belghitar (2021) explored the effect of board gender heterogeneity on company risk-taking. They found that the effect of female executives on company risk-taking was heavily dependent on the company's organizational environment, and that female executives in high-tech industries took more risks than those in non-high-tech industries. Ji, Peng, Sun and Xu (2021) studied the effect of board tenure heterogeneity on corporate risks and discovered that tenure heterogeneity showed in lower stock return volatility,

implying that tenure heterogeneity reduces corporate risks due to tenure heterogeneous boards' proclivity to make less risky investment decisions. Bernile, Bhagwat and Yonker (2018) analyzed the impact of board heterogeneity on corporate risks and innovation, discovering that higher board heterogeneity found in lower volatility, lowering corporate risks. Simultaneously, board diversity encouraged R&D investment and increased the efficiency of corporate innovation. Chen, Gramlich and Houser (2019) investigated the impact of board gender heterogeneity on corporate risk strategies and found that board gender heterogeneity could reduce corporate tax avoidance, implying that gender heterogeneous boards are more concerned about the reputational risks associated with aggressive tax strategies. Jebran, Chen and Zhang (2020) examined the impact of board heterogeneity on stock price crashes and found that both relationship-oriented (gender and age) and task-oriented (tenure and education level) heterogeneity could reduce the risk of future stock crashes. Qayyum et al. (2021) used data from 12 listed companies in the Asia-Pacific market to study the effect of board gender heterogeneity on share price crash risk, and they showed that board gender heterogeneity reduced the risk of the company's stock price crash.

In terms of corporate finance and stock price, Gul, Srinidhi and Ng (2011) studied the relationship between board gender heterogeneity and stock price information content and found that board gender heterogeneity could increase the information content of a company's stock price and that this relationship was stronger in companies with weak corporate governance, implying that gender heterogeneity on the board could be used as an alternative mechanism to corporate

governance. They also found that gender heterogeneity increased the stock price information content, primarily by increasing the disclosure of company information. Byoun, Chang and Kim (2016) investigated the impact of the board of directors' gender and ethnic diversity on dividend payment policies. The study found that companies with higher board heterogeneity were more likely to pay higher dividends, and this relationship was even stronger when the company had more free cash flow. Pucheta-Martinez and Bel-Oms (2016) examined the impact of board gender heterogeneity on dividend payment policies using data from Spanish listed companies and showed that both the proportion of female directors and the percentage of female directors' shareholdings significantly increased the dividend payout ratio of companies. Ain, Yuan, Javaid, Zhao and Xiang (2021) analyzed the impact of board gender heterogeneity on dividend payments in Chinese listed companies and showed that board gender heterogeneity boosted corporate governance, which boosted dividend payments. Gyapong, Ahmed, Ntim and Nadeem (2021) also showed a link between board gender heterogeneity and dividend payments when ownership was decentralized. When ownership was highly concentrated, gender heterogeneity would reduce dividend payments. Using data from listed companies in India, China, and Russia, Saeed and Sameer (2017) examined the impact of board gender heterogeneity on dividend payments in emerging economies and found that board gender heterogeneity was negatively associated with cash dividend payments in emerging economies. This relationship became more pronounced during the financial crisis. Ye, Deng, Liu, Szewczyk and Chen (2019) studied the relationship between board gender heterogeneity and

dividend payments and found a significant positive relationship due to the fact that board gender heterogeneity promotes the level of corporate governance, thereby increasing dividend payments. Abad, Lucas-Pérez, Minguez-Vera and Yagüe (2017) investigated the impact of board gender heterogeneity on information asymmetry in the stock market using data from Spanish listed companies, and found that board gender diversity was negatively correlated with the degree of information asymmetry in the stock market. Hoang, Abeysekera and Ma (2017) analyzed the impact of board heterogeneity on company earnings quality using data from listed companies in Vietnam and found an inverted U-shaped relationship between board heterogeneity and company earnings quality. Strydom, Au Yong and Rankin (2017) examined the relationship between board heterogeneity and corporate earnings quality in Australian listed companies and found an inverted U-shaped relationship between board heterogeneity and corporate earnings quality, with companies having the highest earnings quality when female directors comprised 30% of the board. Lai, Srinidhi, Gul and Tsui (2017) investigated the impact of board gender heterogeneity on corporate audit quality, conducting an empirical analysis using data from publicly traded companies in the US They found that gender heterogeneous boards paid higher audit fees than male boards and were also more likely to hire professional auditors, indicating that boards with female directors may demand higher audit quality. Ward and Forker (2017) studied the impact of board gender heterogeneity in Northern Ireland non-profit credit unions and found that boards with a higher proportion of women exhibited superior financial management, as evidenced by higher loan quality after the financial crisis on the one hand and

higher return on assets on the other. Adusei and Obeng (2019) investigated the impact of board gender heterogeneity on capital structure using a dataset of 441 MFIs from 69 countries around the world, and found that board gender heterogeneity was an important driver of MFI capital structure, which reduced the institutions' level of indebtedness and, consequently, the risk of insolvency they face. Atif, Liu and Huang (2019) investigated the impact of board gender heterogeneity on corporate cash holdings and found that board gender heterogeneity was significantly and negatively associated with corporate cash holdings because female directors' monitoring reduces the agency motivation for cash holdings. Hernandez-Nicolas, Martin-Ugedo and Mínguez-Vera (2019) studied the impact of board gender heterogeneity in Spanish agricultural cooperatives, discovering that firms with more female representation on the board had lower debt levels and higher operational risks and return ratios. Wahid (2019) examined the effect of board gender heterogeneity on financial misconduct and found that companies with gender diverse boards had fewer financial reporting errors and financial fraud. Nguyen (2020) investigated the impact of board gender heterogeneity on the cost of equity in French companies and found that having a higher proportion of women on the board was associated with a significantly lower cost of equity. Tee and Rassiah (2020) looked into the impact of board racial heterogeneity on earnings quality in Malaysian companies and found that boards with higher racial heterogeneity had higher earnings quality.

Furthermore, some scholars focused on other effects of board heterogeneity. For example, Triana, Miller and Trzebiatowski (2014) integrated the threat-rigidity

theory and team heterogeneity to explore the impact of board gender heterogeneity on corporate strategic changes. The study suggested that when the board was not threatened by poor corporate performance and female directors had more power, the relationship between board gender heterogeneity and the amount of strategic change was the most positive. Meanwhile, the relationship was the most negative when the board was threatened by poor corporate performance and female directors wielded significant power. Upadhyay and Zeng (2014) investigated the impact of board gender and racial heterogeneity on corporate transparency and found that board gender and racial congruence improved corporate information transparency. Farag and Mallin (2017) examined the impact of board gender heterogeneity on financial vulnerability in European National Banks and found that a critical amount of female representation on supervisory and governing boards may reduce 'banks' vulnerability to financial crises. Li et al. (2017) studied the relationship between board gender heterogeneity and corporate environmental policies and found that board gender heterogeneity was related to a company's environmental policies in a positive way, i.e., boards with gender heterogeneity were more likely to have environmental-related policies. Harjoto, Laksmana and Yang (2018) investigated the impact of board heterogeneity on investment efficiency and found that board task-oriented heterogeneity (tenure, professional background) significantly improved company investment efficiency. Li and Wahid (2018) studied the impact of board tenure heterogeneity on the effectiveness of board oversight and found that boards with high tenure heterogeneity were more sensitive to CEO performance-turnover, and the study argued that board supervision should be strengthened by

increasing board tenure heterogeneity rather than simply reducing average board tenure. Creek, Kuhn and Sahaym (2019) investigated whether board demographic heterogeneity (gender, race) affects employee satisfaction and found that boards with high heterogeneity were more likely to adopt employee-valued progressive management programs, and that these programs could increase employee satisfaction levels. Mirza, Majeed and Ahsan (2020) investigated the impact of board gender heterogeneity on company investment efficiency and found that board gender heterogeneity significantly inhibited inefficient company investment. The study also found that gender heterogeneity primarily inhibited overinvestment while having no effect on underinvestment. Shoham, Lee, Khan, Tarba and Ahammad (2020) studied the impact of board gender heterogeneity on whether a company chooses to cross-list, discovering that the greater the gender heterogeneity on the board, the less likely a company is to cross-list. Abebe and Dadanlar (2021) researched whether board gender heterogeneity and racial conformity aid in combating discriminatory work environments, showing that having more women and minority directors on the board reduced the likelihood of mass discrimination lawsuits.

Research Review

Scholars have conducted numerous studies on board heterogeneity from the perspectives of factors influencing board heterogeneity, financial performance, social performance, corporate innovation strategies, corporate risk, and corporate finance. However, a review of the literature reveals that, on the one hand, the majority of studies focus on gender and ethnic heterogeneity, accounting for more

than 80% of the literature, while other aspects of board heterogeneity, such as educational background, professional background, and age structure, are under-researched. On the other hand, there is no in-depth analysis in the literature on how board heterogeneity affects a company's internationalization strategy. Therefore, this paper will focus the impact of board heterogeneity on corporate internationalization strategy and investigate the relationship between the two by analyzing board gender, nationality, age, educational background, and professional background from a broader perspective.

Chapter 3 Theoretical Analysis and Research Hypothesis

The Impact of Board Heterogeneity on Companies' International Strategy

International strategy is a high risk decision for companies. During the internationalization process, companies will always face threats such as technical and market access barriers. Factors such as the host country's economic policy and political stability will also add significant uncertainty to the internationalization of businesses. Acedo and Casillas (2007) examined multiple aspects of corporate executives' cognition, including the impact of risk awareness initiatives, tolerance for ambiguity, and international orientation, using the speed index of enterprises entering the market. It has been found that, due to the high risk of international strategy, individual entrepreneurs' or groups' international risk awareness will impede companies' internationalization. According to Luo and Bu (2018), companies' international strategies promote rapid catch-up for emerging market firms, but they are unquestionably risky.

The research on the impact of corporate internationalization strategy has primarily focused on macroenvironmental factors, corporate characteristics, and corporate governance characteristics in previous studies. In terms of macroenvironmental factors, Makino, Lau and Yeh (2002) proposed that emerging economies must accumulate more hidden information and resources to carry out overseas operations due to the institutional weaknesses of their home countries. Rodriguez (2002) found that the economic development level of the home country, cultural differences, political and economic risks, and the level of foreign investment in the host country are all important factors affecting the internationalization model of hotel enterprises. Gerpott and Jakopin (2007) discovered that the host country's political and economic uncertainty, supervision strength, competitive strength, and geographical and cultural distance of enterprises are all significant factors influencing enterprise internationalization. Dowell and Killaly (2009) examined how the three dimensions of target market demand changes, such as frequency, range, and unpredictability, affect internationalization and found that the range and frequency of target market demand changes are negatively related to the degree of enterprise internationalization. Desbordes and Wei (2017) found that the host country's level of financial development encouraged transnational corporations to operate internationally. Rao-Nicholson and Khan (2017) found that the institutional distance between the home country and the host country faced by transnational enterprises caused them to suffer from the disadvantage of outsiders in the host country, resulting in a lack of rationality of transnational enterprises in the host country. Du and Luo (2016) found that China's

political ties may prevent emerging market enterprises from implementing internationalization strategies by reducing the dependence and constraints of local governments and foreign enterprises, whereas the development of China's formal system may promote emerging market enterprises' strategic transformation from establishing political ties to international expansion, as well as reduce the negative impact of political ties.

In terms of company characteristics, Capar and Kotabe (2003) observed that, unlike manufacturing enterprises, service industry internationalization based on the uniqueness of its resources has a U-shaped relationship with performance. Hitt, Bierman, Uhlenbruck and Shimizu (2006) found that human capital and relationship capital are important in the process of increasing the internationalization level of law firms. Elango and Pattnaik (2007) found that international experience in the implementation of enterprise internationalization strategies is generally obtained and learned from parent companies and foreign networks. Similarly, Guler and Guillen (2010) found that the frequency with which enterprises enter the international market, as well as their share of the international market, are largely determined by the advantages of the enterprises' relationship network resources in their home country. Manolova, Manev and Gyoshev (2010) confirmed the importance of enterprise-owned social network resources in the internationalization process and practice of SMEs. Furthermore, Ibeh and Kasem (2011) found that in the early stages of SMEs' internationalization, their social network resources will be more important, whereas in the later stages, their own resources will be more important. According to San Emeterio, Juaneda-Ayensa and

Fernández-Ortiz (2020), bargaining power, number of distributors, diversity of distribution channels, corporate reputation, and brand awareness all have a positive impact on the development of the internationalization strategy of wine industry enterprises, whereas customer relationships and domestic and foreign competitors have a negative impact on internationalization. Chang and Ogasavara (2021) found that cultural cognitive distance has a significant impact on the internationalization speed of transnational corporations. According to Niittymies (2020), heuristic decision-making has a positive impact on the development of internationalization strategy; however, such a positive impact can emerge only after a certain level of specific environmental experience has been accumulated and transformed into usable heuristic decision-making under the stimulus of emergencies. Mitter, Duller, Feldbauer-Durstmüller and Kraus (2014) found an inverted U-shaped relationship between family influence and internationalization. Family enterprises with medium family influence are the most active international companies.

In terms of governance characteristics such as the board of directors and senior management team, Elosge, Oesterle, Stein and Hattula (2018) found that the number of CEO changes has a positive impact on the internationalization process of German enterprises. Laufs, Bembom and Schwens (2016) emphasized the importance of individual decision-makers in enterprise internationalization, particularly the CEO. According to Saeed and Ziaulhaq (2019), the CEO's political ties and education level are positively related to enterprise internationalization, whereas age has a negative impact on enterprise internationalization. Agnihotri and Bhattacharya (2019) found that CEO narcissism has a positive impact on the

internationalization of emerging market companies, which is due to the CEO's high risk proclivity and resource commitment. Calabro, Campopiano, Basco and Pukall (2016) found that high participation of non-family members in the governance structure has a positive impact on the internationalization of family businesses, and that this relationship is mediated by enterprises' international entrepreneurial orientation. Sciascia, Mazzola, Astrachan and Pieper (2013) found a "J-shaped" relationship between family participation on boards of directors and sales internationalization. According to Lee, Kim and Moon (2016), CEO gender and equity have a negative impact on the degree of internationalization of catering enterprises, whereas scale, franchise level, restaurant type, and stock options have a positive impact. Furthermore, CEO tenure and internationalization have an inverted U-shaped relationship.

Many factors influencing enterprise internationalization enterprises have been identified in the preceding studies, but few studies have analyzed how the heterogeneity of the board of directors affects enterprise internationalization enterprises. Gender, age, educational level, occupational background, and tenure diversity on boards can provide more information and resources for board decision-making. Kim and Starks (2016) found that female directors can add diversified expertise and unique skills to the company, leading to better consulting efficiency of the board and more firm value when analyzing how gender heterogeneity of the board affects firm value. Gray and Nowland (2017) examined the impact of board expertise heterogeneity on firm value in Australia and found that when boards diversify their expertise within a subset of specialists such as accountants, bankers,

consultants, lawyers, and CEOs from other companies, shareholders benefit. Boulouta (2013) identified the benefits of diversified information from heterogeneity in his study of the effect of board gender heterogeneity on corporate social performance. He found that the diverse perspectives provided by female directors enable corporate boards to more effectively solve problems related to CSR and meet the demands of stakeholders, thereby improving corporate social performance. Li and He (2021) obtained similar findings when exploring how board heterogeneity affects enterprise innovation. They studied the effects of heterogeneity in demographic characteristics based on gender and age, as well as cognitive characteristics based on education background, professional knowledge, tenure, and the breadth of board experience, on enterprise innovation. The findings show that the cognitive heterogeneity of the board plays a positive role in enterprise innovation, implying that different information from heterogeneous directors can improve decision-making.

In the decision-making process, a heterogeneous board of directors can not only generate different perspectives and analyze problems from different perspectives, but also bring different resources to the company from different backgrounds. Previous research has shown that having a wealth of information and resources can help businesses effectively deal with the uncertainty of the external environment (Dess & Beard, 1984), allowing them to actively implement internationalization strategies.

Based on the preceding analysis, the following hypothesis is proposed in this paper:

H1: Board heterogeneity is conducive to the implementation of a company's international strategy.

The Influence Mechanism of Board Heterogeneity on Companies' International Strategy

As previously stated, heterogeneous boards can give birth to diverse viewpoints and analyze problems from various perspectives during the decision-making process, and directors with diverse backgrounds can bring diverse resources to the corporate. This diverse information and resources will improve the corporation's risk-aversion capabilities (Nguyen, 2011). Some studies have provided evidence to support this. For example, Hoskisson, Chirico, Zyung, and Gambeta (2017) reviewed the organization theory that analyzes the factors affecting risk resistance, such as agency theory, behavioral theory of the firm, expectation theory, socioemotional wealththeory, upper echelons theory, and so on. These studies are all about the role of information and resources in making businesses more risk-averse. Ozdemir, Erkmen and Binesh (2021) investigated the effect of board diversity on risk-bearing for tourism firms, concluding that the more diverse the board of tourism firms, the more risk-resistant they are. As a result, boards with a higher degree of heterogeneity have more information and resources and are more likely to make high risk decisions. On the contrary, homogeneous boards tend to stick to existing strategies without strategic innovation, because the directors are unable to have critical thinking on each other's opinions during decision-making or provide differentiated analysis perspectives, resulting in ignoring details in business operation. Due to the aforementioned shortcomings,

homogeneous boards are less likely to adopt challenging strategic innovation such as internationalization for the international strategy. Therefore, this paper believes that information and resources derived from board heterogeneity can assist companies in reducing uncertainties during the internationalization process, increasing risk-aversion capabilities, and promoting their international strategies.

Based on the preceding analysis, the following hypothesis is proposed in this paper:

H2: Board heterogeneity can help companies implement their international strategy by enhancing their risk-taking capacity.

Analysis of the Moderating Effect at the Individual Level

Contingency Theory (Thompson, Zald & Scott, 1967) states that the role of board heterogeneity in propelling companies' international strategies varies depending on the circumstances. This paper investigates the effect of situational factors at various levels, including individual, organizational, and environmental factors, on the relationship between board heterogeneity and companies' international strategies.

First, chairmen's characteristics can affect the function of board heterogeneity at the individual level. On the one hand, the gender of the chairman is an important situational factor. Existing research shows that female executives are less likely to take risks than their male counterparts. Dowling and Aribi (2013) found that companies with more female directors are much less likely to implement M&A strategy due to its high risk. Srinidhi, Gul and Tsui (2011) discovered similar results: They explored the relationship between female directors and earnings

quality, with the belief that female directors help companies promote earnings quality in order to avoid potential lawsuits. Based on these studies, we can conclude that when a company's chairman is a woman, it is less likely to implement an international strategy. This is due to the fact that, as previously stated, the international strategy is fraught with high risk. However, other studies show that female directors perform better in socializing and communication than their male counterparts. For example, Amorelli and Garcia-Sanchez (2020) believe that female directors are born with a sense of morality and empathy, making them more emotional and thus performing better in dealing with interpersonal relationships. Therefore, female directors perform better in integrating information and resources from diverse board members prior to and during board meetings, as well as propelling the use of this information and resources for companies' international strategies. Furthermore, some studies show that female directors are more diligent in carrying out board responsibilities. They can not only perform board duties such as supervision with initiative (Srinidhi et al., 2011), but they can also make recommendations for board decision-making to ensure the rationality of the decision (Elmagrhi, Ntim, Elamer & Zhang, 2019).

Although studies show that female directors are more likely to avoid risk, which may jeopardize a company's international strategy, their communication skills, diligence, and sense of responsibility are conducive to the integration of heterogeneous information and resources within the board and bringing the positive effect of board heterogeneity into full play, thus fueling a company's international

strategy. The following hypothesis is proposed by the article based on the above analysis:

H3: When the chairman is a woman, board heterogeneity better facilitates companies' international strategy.

However, the chairman's tenure is an important situational factor. Although the integration of the board's disparate information and resources is beneficial to a company's strategic decision-making, an authoritative figure within the board is required to push for such integration among members. According to this paper, the longer the chairman's tenure, the more prestige he has within the board and the more effectively he can integrate different information and resources from heterogeneous board members to serve a company's international strategy.

Studies on director tenure may date back to the upper echelons theory proposed by Hambrick and Mason in 1984. They claim that the top management team's (TMT) characteristics affect their perception, thereby influencing the company's strategic decision. One of the TMT characteristics they proposed is tenure. Following that, scholars conducted extensive empirical research on the effect of TMT tenure on company decision-making. For example, Finkelstein and Hambrick (1990) found that TMTs with longer tenure are more likely to keep corporate strategy stable, and the greater the TMT's autonomy, the stronger the correlation. Meanwhile, tenure is regarded as one of the proxy variables of executive power in some studies on executive power: the longer the tenure, the greater the power. In line with this notion, the paper investigates the relationship between the chairman's tenure and board heterogeneity and companies'

international strategy. To begin with, chairmen with longer tenure are more likely to develop long-term strategies for the company (Finkelstein & Hambrick, 1990), and effective implementation of the international strategy will improve the company's sustainable development (Luo & Bu, 2018). Therefore, a company is more likely to pursue an international strategy if its chairman has a relatively long tenure. Second, chairmen with longer tenures have greater power and status on the board. When discussing decisions, it is easier to gather heterogeneous information and resources from different directors, which magnifies the effect of board heterogeneity, strengthening the relationship between board heterogeneity and companies' international strategy.

In general, the chairman's tenure strengthens the impact of board heterogeneity on a company's international strategy in terms of long-term strategy and increased power. The following hypothesis is proposed based on the above analysis:

H4: The conducive effect of board heterogeneity on companies' international strategy is associated with longer tenure of the directors.

Analysis of the Moderating Effect at the Organizational Level

Second, at the organizational level, this paper argues that companies' limited resources and property rights are significant factors affecting the relationship between board heterogeneity and their international strategies.

A company's international strategy is a strategic decision that involves potential risks. On the one hand, diverse information within the board is required to avoid risk; on the other hand, a company's resources can provide support for its

international strategy. Therefore, when a company has more slack resources, the impact of board heterogeneity on its international strategy is more noticeable. Slack resources, in particular, are used to represent potentially available corporate resources that are conducive to the organization achieving its goals (George, 2005). More slack resources imply more options for making strategic decisions (Greenley & Oktemgil, 1998). O'brien (2003) reveals that a company is more likely to pursue innovative strategies when it has abundant slack resources. Nohria and Gulati (1996) propose that slack resources can make a company more confident in carrying out programs with high uncertainty without fear of capital chain disruption. Bradley, Shepherd and Wiklund (2011) found that when the external environment is hostile to new organization growth, their slack resources will assist them in achieving a timely transformation. All of the aforementioned studies show that a lack of resources has a significant impact on organizational innovation and strategic transformation.

As for the international corporate strategies under study, slack resources also play an important role. The existing studies indicate that slack resources increase a company's ability to take risks. As previously discussed, a company's international strategy is a key indicator of its willingness to take risks (Luo & Bu, 2018). Therefore, abundant slack resources will greatly encourage companies to pursue international strategies. More importantly, if the board has a high level of heterogeneity, directors from various backgrounds can fully rationalize the use of these resources with the help of their perception and push the enterprise to put these resources into the implementation of international strategy. Meanwhile, directors

from various backgrounds may bring additional resources to the enterprise, which can be combined with a company's slack resources by complementing one another, and such resources will accelerate the international strategy. When a company has little abundant slack resources, the effect of board heterogeneity on international strategy is weakened to some extent due to a lack of favorable organizational conditions.

Based on the preceding analysis, the following hypothesis is proposed:

H5: Slack resources aid in moderating board heterogeneity and international strategy. The conducive effect of board heterogeneity on companies' international strategy is associated with more slack resources.

Property rights can have a variety of effects on the relationship between board diversity and international strategy. Moreover, they will be discussed separately in this paper.

First, when compared with SOEs, private enterprises' board heterogeneity may have a greater impact on their international strategies. There are two main reasons for this. First, when faced with high risk and uncertainty in international strategy, SOEs and private enterprises have different attitudes: the former are more cautious, while the latter are more profit-oriented and bold. As a result, board diversity in private enterprises may have a greater impact on companies' international strategy. Empirical evidence has been provided by relevant studies. According to some research, when compared to CEOs of non-SOEs, CEOs of SOEs are more cautious and prefer to avoid financial or other irregularities that involve high risk. This is because most executives of SOEs are also political figures, and if

they make a huge blunder, their careers will be derailed. As a result, even if the board is diverse, it cannot effectively promote international strategies in SOEs. Second, some studies claim that, when compared to private enterprises, the effectiveness of SOEs' managerial hierarchy and mechanisms, including the role of the board, is limited. For example, some scholars conducted comparative analyses using CEO change-performance sensitivity as a proxy variable of company management effectiveness and found that, when compared to private enterprises, SOEs are less sensitive to CEO change-compensation, indicating that their managerial effectiveness is poor (Kato & Long, 2006). Some studies analyzed the reasons for this, and it was discovered that the shareholders of SOEs are more concerned with whether the top executives fulfill the company's social and political responsibilities than with their financial performance (Du, Tang & Young, 2012; Hung, Wong & Zhang, 2012). In this regard, the board of SOEs is less effective. Even if the board is highly heterogeneous, the promotional effect on its international strategy will be somewhat suppressed. Based on the preceding two considerations, we can conclude that board diversity in private enterprises has a greater impact on companies' international strategy.

Then, board heterogeneity in SOEs has a more prominent influence on companies' international strategy than in private ones. There are two major causes as well. First, as the Chinese government has actively promoted the Belt and Road Initiative in recent years, SOEs have been obligated to implement state policies, amplifying this effect. According to relevant studies, SOEs are more international than private ones. As SOEs actively pursue globalization, they can make full use of

information and resources from directors from various backgrounds, thereby promoting international strategies. Second, although some studies have found that corporate management in SOEs is less effective than in private enterprises, China has attached more emphasis on corporate management in the process of reforming the SOEs. This significantly improved their effectiveness. This is supported by some research. For example, Liao, Zhang ang Wang (2019) found that female directors of SOEs play a more important role in driving environmental innovation forward than non-SOE directors. These two factors lead us to the conclusion that board heterogeneity in SOEs has a greater impact on companies' international strategy.

Based on the preceding analysis, this paper suggests the following set of alternative hypotheses:

H6a: Board heterogeneity in SOEs has a greater impact on companies' international strategy.

H6b: In private enterprises, board heterogeneity has a greater impact on international strategy.

Analysis of the Moderating Effect at the Environmental Level

At the environmental level, the dynamism of the external environment and the level of marketization of a company's located areas affect the relationship between board heterogeneity and companies' international strategy.

As the study of organization theory enters the research stage of the open system, scholars pay more attention to the effect of the external environment on the organization. They have proposed various concepts for measuring the features of

the external environment, the most popular of which is environmental uncertainty. Environmental uncertainty primarily refers to an organization's inability to make rational strategic decisions due to a lack of information on decision results and the impact of the environment on decision-making. As research advances, an increasing number of studies propose that environmental uncertainty may be multidimensional rather than unidimensional, and those different dimensions have different influence mechanisms on the organization. Scholars classified environmental uncertainty into three categories: complexity, dynamism, and munificence (Dess & Beard, 1984). Complexity, dynamism, and munificence are three of them. Complexity refers to the number, degree of diversification, and distribution of different elements in the external environment; dynamism refers to the extent of changes in the external environment over time; and munificence refers to the degree of availability of environmental resources that drive the organization's growth. These three dimensions have different effects on the organization: complexity and dynamism primarily affect the organization in terms of information, while munificence primarily affects the organization in terms of resources. In business operations, especially international operations, the most influential dimension is environmental dynamism, because the competitive environment of the global market is ever-changing. Therefore, this paper focuses on the effect of environmental dynamism on the relationship between board heterogeneity and companies' international strategy.

Some studies have explored into how this environmental dynamism affects organizations. For example, March (1991) stated that in a highly dynamic

environment, enterprises may actively pursue new strategies. This is due to the fact that exploitation methods such as improving product quality are insufficient to effectively capture and respond to customers' needs, and exploration methods are required to meet or even create their demands. According to Zhang and Rajagopalan (2010), companies will acclimate to external changes by taking the initiative to implement strategic transformation in order to remain competitive. Luciano, Nahrgang and Shropshire (2020) revealed that the dynamism of the external environment will push companies to seek more knowledge, especially when faced with more unpredictable factors. This increased unpredictability will prompt companies to actively acquire additional knowledge, resources, and opportunities, as well as engage in technological innovation, in order to maintain their competitive advantages. All of these studies show that when a company's external environment is highly dynamic, it will explore new opportunities with more initiative rather than getting cold feet to avoid risk. We can conclude from this that the dynamism of the external environment may propel companies' international strategies. Companies feel more compelled to conduct strategic reform to adapt to the environment when the environment is more dynamic, and international strategy is an important choice for companies. Therefore, we predict that when a company's external environment is more dynamic, board heterogeneity has a greater influence on a company's international strategy. Regarding the surplus information and resources brought by board heterogeneity, environmental dynamism acts more like a catalyst, encouraging directors from diverse backgrounds to actively gather and apply different information and resources to its

international strategy. When a company's external environment is less dynamic, even if the board is highly heterogeneous, the directors of the board lack motivation to integrate different information and resources, undermining its international strategy.

Based on the preceding analysis, the following hypothesis is proposed:

H7: The conducive effect of board heterogeneity on companies' international strategy is associated with greater dynamism of the external environment.

In addition to the competitive market environment represented by environmental dynamism, a company's institutional environment is an important factor affecting the relationship between board heterogeneity and its international strategy.

Companies operate in various environments. For example, environment differs greatly between China's south and north, and between its east and west. One of the factors indicating this difference is the level of marketization in the province where the company is located. In fact, market conditions are inextricably linked to research on corporate strategy, particularly in transitional economies such as China. This is due to the fact that companies are frequently subjected to a series of targets set by governments in areas with a low degree of marketization. Experts in institutional theory believe that enterprises gradually learn the "rules of the game" that either impede or enhance their operations (Peng, Sun, Pinkham & Chen, 2009). The low efficiency of the institutional environment in transition economies will force many countries to implement more market-oriented reforms (Hoskisson,

Eden, Lau & Wright, 2000). When the level of marketization is low, the state can impose social responsibilities on enterprises, such as providing benefits to local communities, developing technologies that aid in the resolution of some national problems, or employing extra workers during times of economic hardship to reduce unemployment. Furthermore, the same holds true for political responsibilities. These various national targets produce a huge financial burden on enterprises. Meanwhile, these objectives increase the agency's costs. The literature on poor enterprise performance focuses primarily on two enterprises of inherent agency conflicts: principal–agent and principal–principal issues. Given that in less market-oriented areas, society entrusts the supervision functions to government representatives, corporate management decisions may be based on political considerations rather than technological standards. Furthermore, the pursuit of multiple goals makes it difficult for companies to develop effective incentive contracts (Firth, Fung & Rui, 2006). Furthermore, corporate executives may be less motivated to pursue profits if they believe the government will limit their ability to optimize operations. Therefore, we believe that in less market-oriented areas, the effectiveness of corporate managerial hierarchies and mechanisms cannot be guaranteed, and government intervention plays a significant role.

Scholars found that market reform can help a region become more market-oriented. Microeconomic policies that promote market reform can reduce government intervention in the allocation of economic resources while increasing the efficiency with which market participants use these resources. As a result of a high level of marketization in the local area and less government intervention,

enterprises' business decisions are more rational. This logic can not only provide a safeguard for the implementation of a company's international strategy, but it can also ensure the effective operation of the corporate management mechanism, particularly the board decision mechanism.

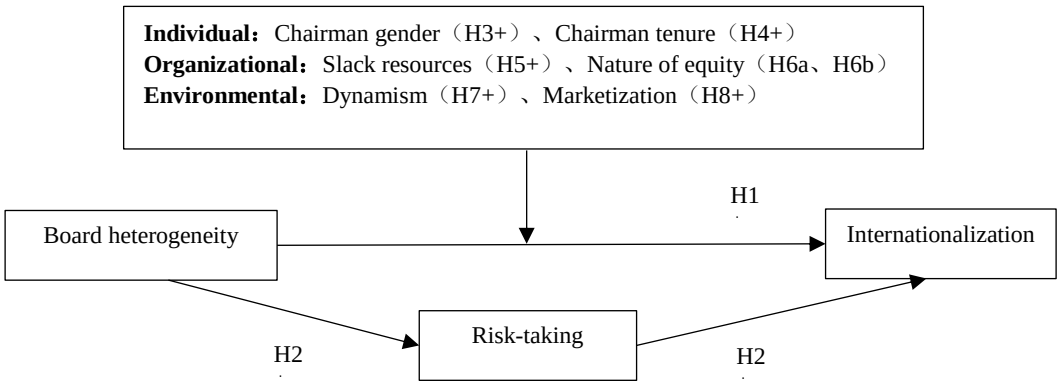
Finally, more market-oriented areas bear fewer political or social responsibilities and are subject to more regulated institutions. This solid institutional environment could provide an institutional guarantee for companies' international strategy and ensure the effectiveness of board management, thereby increasing the positive effect of board heterogeneity on companies' international strategy. Based on the preceding analysis, the following hypothesis is proposed in this paper:

H8: The conducive effect of board heterogeneity on companies' international strategy is associated with more market-centered areas.

In addition, this paper will discuss two subjects in further studies: One is to subdivide board heterogeneity into task-related heterogeneity (board heterogeneity based on educational background, occupational background, tenure and the category of directors) and non-task-related heterogeneity (board heterogeneity based on gender, age, nationality, and other demographic characteristics). Moreover, this paper will explore whether the effects of these two kinds of heterogeneities on companies' international strategy vary. This paper will also analyze the impact of a company's international strategy on its performance, thus forming theoretical framework on "board structure-internationalization-corporate performance." In brief, the theoretical model of this research is shown in Figure 4.

Figure 4

Technical route



Chapter 4 Data and Variables

Data

The research sample for this study is made up of Chinese listed companies from 2011 to 2020. Meanwhile, the initial data is processed as follows to ensure the completeness and reliability of the sample data: (1) eliminate the samples of the financial industry and other samples labeled as St, * St, and PT during the sampling period; (2) eliminate the samples of missing data in each variable; and (3) eliminate the samples of extreme values by winsorizing the main variables at 1% and 99% percentiles. A total of 17,071 firm-year observations are obtained from 2,673 companies. Data on companies' international strategy, board heterogeneity, and control variables are sourced from the China Stock Market & Accounting Research (CSMAR).

Variables

Dependent Variable

International strategy. It is calculated by dividing a company's overseas income by its total revenue (Hitt, Bierman, Uhlenbruck & Shimizu, 2006).

Independent Variables

Board heterogeneity. To be consistent with existing literature, we employ gender, age, educational background, occupational background, and tenure as the primary indicators of board heterogeneity.

Gender is one of the most studied aspects of population diversity (Terjesen, Sealy, & Singh, 2009). As a binary variable, its value is 1 if the board member is male and 0 otherwise.

According to the literature on age diversity, age heterogeneity can prevent group thinking by balancing young board members who favor enthusiasm, energy, and risks with the elders who are experienced, cautious, and risk-averse and bring more information resources (Kim & Lim, 2010; Darmadi, 2011). According to existing literature, we divide age into five categories–the ages below 35 are assigned to 1, 36–45 to 2, 46–55 to 3, 56–65 to 4, and above 65 to 5.

We employ the educational backgrounds of board members to measure educational heterogeneity and categorize them accordingly. Undergraduate degrees are assigned to 1, undergraduate degrees to 2, and graduate degrees to 3.

Heterogeneity of occupational background. The CSMAR lists board members' occupational backgrounds, which include production, R&D, design, human resources, management, marketing, finance, accounting, law, and ten other types. According to the existing literature, a board member's occupational background is assigned to 1 if it is production, R&D, or design; 2 if it is human resources, management, or market; and 3 if it is finance, accounting, legal, or the others.

Heterogeneity of tenure. The tenure of board members is divided into four categories. It is assigned to 1 if it is less than or equal to 18 months; 2 if it is 18–36 months; 3 if it is 36–54 months, and 4 if it is longer than 54 months.

We use the Blau index to measure the heterogeneity of each dimension after categorizing indicators of continuity, and then add the Blau indexes of these dimensions to obtain indicators of board heterogeneity. The Blau index is calculated in the following manner:

$$Blau = 1 - \sum_{i=1}^{k} P_i^2$$

Pi is the proportion of board members in the given dimension's category I, and k is the number of categories in the given dimension.

Mediator Variable

Risk-taking. Two methods are used to assess the company's risk-taking, based on existing research (Khaw, Liao, Tripe & Wongchoti, 2016; Su, Liu & Zhang, 2019). The volatility of the company's profits is referred to as risk1. The company's annual ROA is first adjusted by the industry, and then the standard deviation of the industry adjusted ROA over a three-year rolling period is calculated. That is, the volatility of the three-year ROA from 2008 to 2010 measures the company's risk-taking in 2008. risk2 is the difference between the industry adjusted maximum and minimum ROA over a three-year rolling period.

Moderator Variables

Gender of the chairman of the board. It is taken as 1 when it is female, otherwise 0.

Tenure of the chairman of the board. It is the natural logarithm of the time (months) that the chairman has held the position.

Slack resources. The ratio of cash and cash equivalents to total assets is used to calculate financial redundancy (Kim & Bettis, 2014; Vanacker, Collewaert & Paeleman, 2013). This metric is adjusted by deducting the cash and cash equivalents ratio from the average total assets of a company in the same industry (Bromiley, 1991).

Nature of property rights. It is set to 1 for SOEs and 0 for all other enterprises (including private enterprises, foreign-funded enterprises, etc.).

Environmental dynamics. The external environment is the source of environmental dynamics, and changes in it cause fluctuations in the core business of companies, resulting in fluctuations in sales income. (Dess & Beard, 1984). Therefore, environmental uncertainty can be measured by fluctuations in corporate performance. Based on the method of Ghosh and Olsen (2009), we use the standard deviation of companies' sales income over the past five years to measure environmental dynamics.

Level of marketization. The data on the institutional environment is derived from the marketization index. The index depicts the process of marketization in the different provinces of China in different years from five aspects, which are "the relation between government and market," "the development of the non-state-owned economy," "the development of product market," "the development of factor market," and "the development of market intermediary organizations and legal environments." This index does not include data from the Tibet autonomous region because it is largely missing. The better the institutional environment, the higher the marketization index. For example, Zhejiang province had the highest level of marketization in 2014, with a marketization score of 9.78, while Qinghai province had the lowest, with a score of 2.53. Provinces in the middle, like Sichuan, scored 6.62 on that index. This disparity reflects differences in the institutional environments of these regions. It should be noted that the marketization index only

collected data from 1998 to 2014, and the figure for 2014 is used to replace the figures for 2015, 2016, and 2017, following common practice in academia.

Control Variables

To control the impact of other variables on a company's international strategy, we added a series of control variables to the model, including corporate size, asset–liability ratio, return on assets, corporate age, board size, equity restriction ratio, CEO duality, and major shareholder holding proportion. Corporate size is measured by the natural logarithm of the total assets of a company. The asset–liability ratio is measured by dividing total liabilities by the total assets. Return on assets is measured by dividing net profits by the total assets. The natural logarithm of 1 plus the number of years counting from the listing year to the year of statistics is referred to as corporate age. The natural logarithm of the total number of board members is used to calculate board size. The equity restriction ratio is calculated by dividing the total shareholding of the second to fifth largest shareholders by the total shareholding of the top shareholder. CEO duality is a fictitious variable. If the CEO also serves as chairman, the value is 1, otherwise it is 0. The holding proportion of major shareholders is the ratio of the top shareholder's shares to the total number of shares in the company. We also have control over the year and industry virtual variables in the model.

The definitions of the variables are presented in Table 1.

Table 1

Definitions of Variables

Variables	Name	Measurements
Internationalization	inter	The ratio of the overseas income of a company to its total revenues

Board heterogeneity	Blau	Blau index
Risk-taking	risk1/risk2	The volatility of the three-year ROA
Gender of board chairman	gender_chairman	It is denoted by 1 when it is female, otherwise 0
Tenure of board chairman	tenure_chairman	It refers to the natural logarithm of the time (months) during which the chairman holds the position
Slack resources	slack	The ratio of cash and cash equivalents to total assets
Nature of property rights	equity	It is denoted by 1 for state-owned enterprises and as 0 for other enterprises
Environmental dynamics	dynamic	The standard deviation of companies' sales income over the past five years
Level of marketization	market	Marketization index
Corporate size	size	The natural logarithm of the total assets of a company
The asset–liability ratio	lev	Dividing total liabilities by the total assets
Return on assets	roa	Dividing net profits by the total assets
Corporate age	age	The natural logarithm of 1 plus the number of years counting from the listing year to the year of the statistics
Board size	boardsize	The natural logarithm of the total number of board members
The equity restriction ratio	balance	The ratio of the total shareholding of the second to the fifth largest shareholders to that of the top shareholder
CEO duality	dual	If the CEO is also the chairman, the value is taken as 1, otherwise, it is 0
The ratio of the top shareholder's shares to the company's total shares	first	The ratio of the top shareholder's shares to the company's total shares

Chapter 5 Empirical Results

Descriptive Statistics

Table 2 shows the variables' descriptive statistics. The mean value of companies' international strategies is 0.145, with a minimum of 0 and a maximum of 0.910, indicating significant differences in international strategies among companies. The mean board heterogeneity is 2.532, with a minimum of 1.620 and

a maximum of 3.198. In terms of moderating variables, the percentage of female chairmen in the sample companies is only 4.9%, and the average tenure of chairmen is 44 months. The share of SOEs is 28.6%, and the mean value of slack resources is -0.003, with a minimum of -0.186 and a maximum of 0.419, indicating significant differences in slack resources between companies. The mean for environmental dynamics is 0.295, the minimum is 0.037, and the maximum is 1.516. The mean marketization is 8.754, the minimum is 3.610, and the maximum is 11.310. For control variables, the mean of company size is 22.250; asset–liability ratio, 0.419; return on total assets, 0.040; company age, 1.976; the board's size, 2.242; and equity balance, 0.773. In 30.3% of the companies, the CEO also serves as the chairman of the board, and major shareholders hold 34% equity on average.

Table 2

Descriptive Statistics

variable	mean	sd	min	p50	max
inter	0.145	0.203	0	0.042	0.910
Blau	2.532	0.333	1.620	2.565	3.198
risk1	0.042	0.052	0.002	0.023	0.301
risk2	0.080	0.096	0.003	0.043	0.562
gender_chairman	0.049	0.217	0	0	1
tenure_chairman	3.793	0.982	0	3.989	5.595
equity	0.286	0.452	0	0	1
slack	-0.003	0.119	-0.186	-0.034	0.419
dynamic	0.295	0.240	0.037	0.230	1.516
market	8.754	1.759	3.610	9.280	11.310
size	22.25	1.294	19.97	22.07	26.30
lev	0.419	0.204	0.052	0.411	0.875
roa	0.040	0.061	-0.261	0.040	0.196
age	1.976	0.908	0	2.079	3.296
boardsize	2.242	0.175	1.792	2.303	2.773
balance	0.773	0.619	0.032	0.615	2.854
dual	0.303	0.460	0	0	1
first	0.340	0.148	0.084	0.319	0.741

Correlation Analysis

The Pearson correlation coefficients of the variables are presented in Table 3. The correlation coefficient between board heterogeneity and international strategies is 0.068, which is significant at the 1% level of significance, indicating that hypothesis 1 is initially supported. Furthermore, the absolute values of correlation coefficients across most explanatory variables are less than 0.3, indicating that the model has no serious multicollinearity issues. We then tested the model with variance inflation factors (VIF), and the results showed that the mean VIF is 1.61 and the maximum is 2.37, both of which are significantly lower than the standard value of 5. The VIF test results confirmed that the model has no serious multicollinearity issues.

Table 3

Correlation Analysis

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. inter	1																
2. Blau	0.068***	1															
3. risk1	0.030***	0.036***	1														
4. risk2	0.032***	0.035***	0.975***	1													
5. gender_chairman	0.006	0.098***	-0.010	-0.012	1												
6. tenure_chairman	0.060***	0.077***	-0.032***	-0.033***	-0.028***	1											
7. equity	-0.135***	-0.144***	-0.076***	-0.076***	-0.055***	-0.178***	1										
8. slack	0.038***	-0.069***	-0.061***	-0.063***	0.026***	-0.076***	-0.081***	1									
9. dynamic	-0.044***	-0.022**	0.079***	0.083***	-0.001	-0.041***	-0.136***	-0.034***	1								
10. market	0.149***	0.106***	0.038***	0.038***	0.032***	0.039***	-0.173***	0.037***	-0.053***	1							
11. size	-0.109***	-0.015*	-0.096***	-0.099***	-0.027***	0.043***	0.383***	-0.218***	0.072***	-0.038***	1						
12. lev	-0.079***	-0.029***	0.011	0.011	-0.018**	-0.006	0.312***	-0.404***	0.104***	-0.076***	0.549***	1					
13. roa	0.004	-0.056***	-0.297***	-0.300***	0.012	0.037***	-0.092***	0.258***	0.023**	0.015**	-0.042***	-0.369***	1				
14. age	-0.142***	0.019**	0.001	0.003	-0.011	0.114***	0.414***	-0.291***	-0.007	-0.100***	0.457***	0.413***	-0.225***	1			
15. boardsize	-0.075***	0.062***	-0.063***	-0.061***	-0.056***	-0.022***	0.285***	-0.046***	-0.070***	-0.159***	0.266***	0.158***	-0.005	0.146***	1		
16. balance	0.051***	0.036***	0.067***	0.070***	-0.032***	0.009	-0.227***	0.035***	0.063***	0.079***	-0.090***	-0.133***	0.003	-0.158***	0.015**	1	
17. dual	0.111***	0.057***	0.034***	0.033***	-0.008	0.002	-0.287***	0.087***	0.036***	0.129***	-0.201***	-0.144***	0.048***	-0.240***	-0.178***	0.029***	1
18. first	-0.036***	-0.053***	-0.100***	-0.103***	0.030***	-0.103***	0.177***	0.078***	0.033***	-0.023***	0.143***	0.030***	0.138***	-0.115***	-0.014*	-0.690***	-0.014*

Note: * p<0.1, ** p<0.05, *** p<0.01

Analysis of Regression Results

Table 4 shows the regression results of board heterogeneity on companies' international strategies. The explanatory variables in model 1 merely include board heterogeneity and dummy variables for year and industry. The Blau coefficient is 0.021, which is significant at the 1% level of significance. Model 2 now includes control variables, and the Blau coefficient is 0.021, which is also significant at the 1% level of significance. The results show that board heterogeneity has a significant positive effect on companies' international strategies, implying that board heterogeneity facilitates companies' international strategies, implying that hypothesis 1 is correct. The economic significance is close to 5%.

Models 2 and 3 are used to test the mediating role of risk1. The coefficient of Blau in Model 2 is 0.006, which is significant at the 1% level, indicating that the heterogeneity of the board of directors will enhance the level of corporate risk-taking. The coefficients of Blau and risk1 in Model 3 are both significantly positive, indicating that the board of directors' diversity promotes the company's internationalization strategy by increasing risk-taking. In Models 4 and 5, the variable of risk-taking is replaced by risk2. The results also show that the board of directors' diversity promotes the company's internationalization strategy by increasing the company's risk-taking. Hypothesis 2 has been validated.

Table 4

Regression Results of the Impact of Board Heterogeneity on Companies' International Strategies

	model1	model2	model3	model4	model5
	inter	risk1	inter	risk2	inter

Blau	0.021***	0.006***	0.025***	0.010***	0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
risk1			0.058*		
			(0.065)		
risk2					0.036**
					(0.038)
size	-0.003**	-0.006***	-0.005***	-0.011***	-0.004***
	(0.049)	(0.000)	(0.007)	(0.000)	(0.008)
lev	0.022**	0.024***	0.033***	0.047***	0.033***
	(0.028)	(0.000)	(0.001)	(0.000)	(0.001)
roa	-0.036	——	——	——	——
	(0.188)	——	——	——	——
age	-0.022***	0.005***	-0.021***	0.009***	-0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
boardsize	-0.031***	-0.011***	-0.025***	-0.020***	-0.025***
	(0.001)	(0.000)	(0.008)	(0.000)	(0.009)
balance	0.003	0.002**	0.00200	0.005***	0.00200
	(0.392)	(0.012)	(0.630)	(0.004)	(0.637)
dual	0.023***	0.002*	0.020***	0.003*	0.020***
	(0.000)	(0.080)	(0.000)	(0.087)	(0.000)
first	-0.030*	-0.018***	-0.031*	-0.033***	-0.031*
	(0.050)	(0.000)	(0.055)	(0.000)	(0.056)
_cons	0.214***	0.183***	0.208***	0.348***	0.206***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
industry	yes	yes	yes	yes	yes
year	yes	yes	yes	yes	yes
N	17071	15089	15089	15089	15089
Adj_R2	0.1202	0.1254	0.1161	0.1285	0.1162

Note: p-values in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Table 5 gives the results of the moderating effect at the individual level. Model 1 includes an interaction term between the chairman's gender and board heterogeneity, and the coefficient for this item is 0.075, which is significant at the 1% level of significance. The result suggests that female chairmen can positively moderate the relationship between board heterogeneity and companies' international strategies, proving hypothesis 3. The interaction item between the chairman's tenure and board heterogeneity is added to model 2, and its coefficient is 0.016, which is significant at the 1% level of significance. The findings show that the chairman's tenure can positively moderate the relationship between board

heterogeneity and companies' international strategies, thereby validating hypothesis 4.

Table 5

Results of the Moderating Effects at the Individual Level

	model1	model2
Blau	0.022***	0.020***
	(0.000)	(0.000)
Blau*gender_chairman	0.075***	
	(0.004)	
gender_chairman	-0.010	
	(0.256)	
Blau*tenure_chairman		0.016***
		(0.001)
tenure_chairman		0.010***
		(0.000)
size	-0.003**	-0.004**
	(0.045)	(0.019)
lev	0.022**	0.024**
	(0.027)	(0.020)
roa	-0.036	-0.049*
	(0.189)	(0.075)
age	-0.022***	-0.023***
	(0.000)	(0.000)
boardsize	-0.031***	-0.030***
	(0.001)	(0.001)
balance	0.003	0.004
	(0.384)	(0.220)
dual	0.023***	0.023***
	(0.000)	(0.000)
first	-0.030**	-0.020
	(0.050)	(0.204)
_cons	0.213***	0.185***
	(0.000)	(0.000)
industry	yes	yes
year	yes	yes
N	17071	17071
Adj_R2	0.1205	0.1230

Note: p-values in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Table 6 shows the results of the organizational moderating effect. Model 1 incorporates the interaction term of slack resources and board heterogeneity. The

coefficient of the term is 0.100, which indicates that slack resources positively regulate the link between board heterogeneity and companies' international strategies at the 1% level of significance. The richer the companies' slack resources, the greater the effect of board heterogeneity on their international strategies. This supports Hypothesis 5. The coefficient of the interaction term between the nature of property rights and board heterogeneity in Model 2 is 0.027, which is significant at the 5% level of significance. The findings suggest that board heterogeneity has a greater impact on companies' international strategies in SOEs than in private enterprises, and hypothesis 6b is supported.

Table 6

Results of the Moderating Effects at the Organizational Level

	model1	model2
Blau	0.021***	0.020***
	(0.000)	(0.000)
Blau*slack	0.100***	
	(0.011)	
slack	0.028**	
	(0.029)	
Blau*equity		0.027**
		(0.006)
equity		-0.007*
		(0.059)
size	-0.003*	-0.003*
	(0.055)	(0.076)
lev	0.029***	0.024**
	(0.006)	(0.020)
roa	-0.040	-0.039
	(0.142)	(0.158)
age	-0.022***	-0.021***
	(0.000)	(0.000)
boardsize	-0.032***	-0.028***
	(0.000)	(0.002)
balance	0.003	0.003
	(0.407)	(0.465)
dual	0.023***	0.022***
	(0.000)	(0.000)
first	-0.032**	-0.026*

	(0.037)	(0.092)
_cons	0.212***	0.202***
	(0.000)	(0.000)
industry	yes	yes
year	yes	yes
N	17071	17071
Adj_R2	0.1206	0.1206

Note: p-values in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Table 7 shows the results of the environmental moderating effect. The interaction term coefficient between environmental dynamics and board heterogeneity is 0.068, which is significant at the 5% level of significance. The findings indicate that environmental dynamics positively moderate the relationship between board heterogeneity and companies' international strategies, i.e., the higher the external dynamics, the greater the effect of board heterogeneity on companies' international strategies, and the data support hypothesis 6. The interaction term between marketization and board heterogeneity is introduced in model 2, and its coefficient is 0.007, which is significant at the 5% level of significance. This demonstrates that there is a strong correlation between companies' local market marketization levels and the influence of board heterogeneity on companies' international strategy, and hypothesis 8 is valid.

Table 7

Results of the Moderating Effects at the Environmental Level

	model1	model2
Blau	0.036***	0.017***
	(0.000)	(0.001)
Blau*dynamic	0.068**	
	(0.011)	
dynamic	0.001	
	(0.919)	
Blau*market		0.007**
		(0.026)

market		0.015***
		(0.000)
size	-0.002	-0.003*
	(0.306)	(0.082)
lev	0.015	0.026***
	(0.246)	(0.010)
roa	-0.108***	-0.043
	(0.004)	(0.111)
age	-0.038***	-0.019***
	(0.000)	(0.000)
boardsize	-0.006	-0.021**
	(0.599)	(0.021)
balance	0.001	0.001
	(0.956)	(0.696)
dual	0.014***	0.020***
	(0.003)	(0.000)
first	-0.027	-0.038**
	(0.164)	(0.014)
_cons	0.162***	0.097**
	(0.001)	(0.014)
industry	yes	yes
year	yes	yes
N	8398	17071
Adj_R2	0.1095	0.1325

Note: p-values in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Robustness Tests

To ensure the robustness of the regression results, the following robustness tests are run.

First, we analyze the role of board heterogeneity in the process of corporate internationalization strategy development from the ground up. We specifically excluded samples of changes in the company's overseas earnings. The changes here refer to the transition from zero to more than zero overseas income, implying that the company implemented the nationalization strategy and obtained overseas income. For example, sample company A's overseas revenue was 0 from 2012 to 2018, but it accounted for 0.39% of operating revenue in 2019. The regression

analysis includes the corresponding observations from 2018 and 2019. There are 452 companies in the sample range that have developed international strategies from the ground up, resulting in 904 observations. We conducted regression analysis on these observations, and the results are shown in model 1 in Table 8. In the sample of internationalization strategies from 0 to 1, we still find that the heterogeneity of the board of directors has a significant impact on the company's internationalization strategy.

Second, given the long-term nature of the company's internationalization strategy, such as the continuous maintenance of the company's internationalization income at around 15%, and the variation range of the board heterogeneity is also small, the board heterogeneity may be positively related to the internationalization income at this time, but it has little impact on the company's internationalization strategy. To avoid this situation interfering with the regression results, we use the Chang model to analyze i.e. we take the first-order difference of variables in the regression analysis to replace the original variables, and analyze the impact of changes in the board of directors' heterogeneity on the change range of the company's internationalization strategy. Table 8 shows the regression results for model 2. The regression results are still significant after the first-order difference of each variable, as can be seen. This demonstrates that changing the board of directors' heterogeneity has a positive effect on changing the company's internationalization strategy, which is consistent with our hypothesis.

Third, to avoid the impact of unobservable factors such as company culture, we further controlled the individual fixation effect in the regression model, and the

results are presented in model 3 of Table 8. After controlling for individual fixation effects, board heterogeneity continues to influence firms' international strategies.

Table 8

Results of Changing Measurements of Internationalization Strategy and Change Model

	model3	model2	model3
Blau	0.114**	0.008***	0.009***
	(0.024)	(0.003)	(0.004)
size	0.017	-0.002	0.003
	(0.313)	(0.479)	(0.118)
lev	-0.045	0.015	0.028***
	(0.662)	(0.105)	(0.002)
roa	-0.377	-0.043***	-0.081***
	(0.234)	(0.001)	(0.000)
age	0.049**	0.009**	0.005*
	(0.033)	(0.029)	(0.064)
boardsize	-0.062	0.003	-0.010
	(0.496)	(0.755)	(0.267)
balance	0.009	-0.001	0.008**
	(0.813)	(0.712)	(0.023)
dual	0.024	-0.006**	-0.007***
	(0.473)	(0.012)	(0.004)
first	0.001	-0.073***	0.004
	(0.998)	(0.001)	(0.815)
_cons	-0.611	0.009	-0.012
	(0.125)	(0.223)	(0.843)
industry	yes	yes	yes
year	yes	yes	yes
N	904	13392	17071
Adj_R2	0.252	0.011	0.816

Note: p-values in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Fourth, the dependent variable is remeasured, and the number of overseas subsidiaries is used to assess the companies' international strategies. To be more specific, the CSMAR database contains information on all subsidiaries of publicly found companies, and overseas subsidiaries are identified by their places of registration. Then, for the year, all of the companies' overseas subsidiaries are

counted. After adding one, the logarithm of the figure is used as the dependent variable in the regression model. Table 9 displays the regression results. It is clear that board heterogeneity has a significant positive effect on companies' international strategies even after replacing its measuring method. Moreover, the coefficients of interaction terms between moderating variables and board heterogeneity are all significantly positive, and the regression results are generally consistent with the above results.

Table 9

Results of Changing Measurements of Internationalization Strategy

	model1	model2	model3	model4	model5	model6	model7
Blau	0.172***	0.175***	0.166***	0.167***	0.130***	0.189***	0.162***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Blau*gender_chairman		0.260***					
		(0.008)					
gender_chairman		-0.038					
		(0.208)					
Blau*tenure_chairman			0.118***				
			(0.000)				
tenure_chairman			0.059***				
			(0.000)				
Blau*slack				0.294*			
				(0.056)			
slack				-0.177***			
				(0.002)			
blau*equity					0.201***		
					(0.000)		
equity					-0.263***		
					(0.000)		
Blau*dynamic						0.237**	
						(0.031)	
dynamic						0.236***	
						(0.000)	
Blau*market							0.051***
							(0.000)
market							0.044***
							(0.000)
size	0.124***	0.123***	0.120***	0.124***	0.134***	0.081***	0.124***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
lev	-0.029	-0.028	-0.022	-0.069	0.004	0.082	-0.017
	(0.482)	(0.491)	(0.585)	(0.108)	(0.918)	(0.140)	(0.673)
roa	-0.194*	-0.193*	-0.268**	-0.158	-0.241**	0.392**	-0.206*
	(0.081)	(0.081)	(0.015)	(0.156)	(0.028)	(0.012)	(0.062)
age	-	-	-	-	-0.019**	-	-

	0.060***	0.060***	0.063***	0.065***		0.286***	0.050***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.037)	(0.000)	(0.000)
boardsize	-0.299***	-0.298***	-0.290***	-0.296***	-0.191***	-0.295***	-0.274***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
balance	-0.031**	-0.031**	-0.0230	-0.030**	-0.042***	-0.041**	-0.035**
	(0.034)	(0.035)	(0.107)	(0.037)	(0.003)	(0.036)	(0.017)
dual	0.106***	0.106***	0.105***	0.107***	0.071***	0.117***	0.098***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
first	-0.472***	-0.472***	-0.412***	-0.467***	-0.363***	-0.543***	-0.494***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
_cons	-2.013***	-2.017***	-2.184***	-1.984***	-2.408***	-0.544**	-2.329***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.010)	(0.000)
industry	yes	yes	yes	yes	yes	yes	yes
year	yes	yes	yes	yes	yes	yes	yes
N	17071	17071	17071	17071	17071	8398	17071
Adj_R2	0.1037	0.1040	0.1105	0.1043	0.1184	0.1423	0.1106

Note: p-values in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Fifth, as previously stated, the effects of board heterogeneity on companies' international strategies in various contexts have been validated using interaction terms between moderating variables and the independent variable. We used a grouping approach in this section to investigate the impact of board heterogeneity on companies' international strategies in different subgroup samples. Discrete variables are grouped directly based on their values. We calculated the medians of continuous variables first, then divided the samples into high and low groups. The subgroups are shown in Panels A, B, and C of Table 10. Panel A shows that the effect of board heterogeneity on companies' international strategies is stronger in two samples, namely female chairmen and chairmen's tenure, which is consistent with hypotheses 3 and 4. Panel B demonstrates that, within the samples with large slack resources and SOEs, board heterogeneity has a greater impact on companies' international strategies, supporting hypotheses 5 and 6b. Panel C suggests that the effect of board heterogeneity on companies' international strategies is more

significant in samples with high environmental dynamics, which is consistent with hypothesis 7. The only difference between the above-mentioned findings is that within the samples with varying levels of marketization, the coefficients of board heterogeneity are 0.017 in both groups, which is not statistically significant. Generally speaking, the results are largely consistent with previous findings, except for the subgroups of marketization.

Table 10

Results of Subgroups Analysis

Panel A	**Female chairman**	**Male chairman**	**Longer tenure**	**Shorter tenure**
Blau	0.072***	0.016***	0.038***	-0.004
	(0.006)	(0.000)	(0.000)	(0.469)
size	0.00700	-0.004**	-0.006***	-0.001
	(0.410)	(0.031)	(0.009)	(0.676)
lev	-0.00600	0.021**	0.0250	0.023*
	(0.907)	(0.040)	(0.102)	(0.093)
roa	0.108	-0.0440	-0.0250	-0.055
	(0.399)	(0.112)	(0.526)	(0.149)
age	0.0110	-0.024***	-0.028***	-0.024***
	(0.341)	(0.000)	(0.000)	(0.000)
boardsize	-0.142***	-0.026***	-0.023*	-0.033***
	(0.001)	(0.004)	(0.077)	(0.007)
balance	0.003	0.003	0.004	0.00500
	(0.889)	(0.469)	(0.460)	(0.360)
dual	0.009	0.023***	0.022***	0.023***
	(0.600)	(0.000)	(0.000)	(0.000)
first	0.085	-0.036**	-0.024	-0.020
	(0.278)	(0.021)	(0.292)	(0.370)
_cons	-0.002	0.224***	0.244***	0.210***
	(0.994)	(0.000)	(0.000)	(0.000)
industry	yes	yes	yes	yes
year	yes	yes	yes	yes
N	843	16252	8459	8636
Adj_R2	0.1005	0.1243	0.1222	0.1202
Panel B	**More slack resources**	**Less slack resources**	**SOEs**	**Non-SOEs**
Blau	0.033***	0.003	0.039***	0.011*
	(0.000)	(0.649)	(0.000)	(0.054)
size	-0.001	-0.004**	-0.003	0.002
	(0.749)	(0.036)	(0.119)	(0.445)
lev	0.0160	0.033**	0.022	0.0120

	(0.326)	(0.017)	(0.164)	(0.334)
roa	-0.077*	-0.0190	-0.154***	-0.029
	(0.071)	(0.584)	(0.002)	(0.380)
age	-0.021***	-0.023***	-0.005	-0.024***
	(0.000)	(0.000)	(0.165)	(0.000)
boardsize	-0.0190	-0.049***	-0.028**	-0.021*
	(0.157)	(0.000)	(0.038)	(0.079)
balance	0.00500	0.00500	0.001	0.00400
	(0.350)	(0.263)	(0.990)	(0.316)
dual	0.028***	0.017***	0.00600	0.022***
	(0.000)	(0.000)	(0.460)	(0.000)
first	0.0120	-0.060***	-0.052**	-0.00800
	(0.614)	(0.004)	(0.020)	(0.711)
_cons	0.0600	0.363***	0.175***	0.0880
	(0.307)	(0.000)	(0.002)	(0.108)
industry	yes	yes	yes	yes
year	yes	yes	yes	yes
N	8547	8548	4889	12206
Adj_R2	0.1397	0.1078	0.1035	0.1168
Panel C	**Higher dynamism**	**Lower dynamism**	**Higher degree of marketization**	**Lower degree of marketization**
Blau	0.053***	0.018**	0.017**	0.017***
	(0.000)	(0.038)	(0.011)	(0.005)
size	-0.00100	-0.00100	0.001	-0.00200
	(0.597)	(0.697)	(0.861)	(0.230)
lev	0.031*	-0.00200	0.0120	0.0210
	(0.089)	(0.911)	(0.424)	(0.126)
roa	-0.0670	-0.139**	0.0420	-0.199***
	(0.171)	(0.015)	(0.272)	(0.000)
age	-0.021***	-0.057***	-0.020***	-0.021***
	(0.002)	(0.000)	(0.000)	(0.000)
boardsize	0.00500	-0.0160	0.00100	-0.049***
	(0.747)	(0.342)	(0.944)	(0.000)
balance	0.00900	-0.00700	0.00400	0
	(0.159)	(0.276)	(0.454)	(0.962)
dual	0.019***	0.00700	0.019***	0.024***
	(0.003)	(0.320)	(0.000)	(0.000)
first	0.052*	-0.103***	-0.0310	-0.039**
	(0.051)	(0.000)	(0.207)	(0.046)
_cons	-0.00300	0.295***	0.158**	0.258***
	(0.963)	(0.000)	(0.018)	(0.000)
industry	yes	yes	yes	yes
year	yes	yes	yes	yes
N	4199	4199	8679	8413
Adj_R2	0.1240	0.1027	0.1344	0.0958

Note: p-values in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Lastly, we used two approaches to test the relationship between board heterogeneity and companies' international strategies to prevent potential endogenous problems. To begin, board heterogeneity with a one-period lag is regressed against companies' current international strategies, and the results are shown in column (1) of Table 11. Even after a one-period lag, board heterogeneity remains significantly positive. The model was then tested using the instrumental variables method. Regarding previous literature, the mean values of the industry, year, and province are used as instrumental variables, and the regression results are listed in column (2) of Table 11, indicating that the coefficient of board heterogeneity remains significantly positive.

Table 11

Results of Endogenous Tests

	model1	model2
L.blau	0.021***	
	(0.000)	
Blau		0.063***
		(0.000)
size	-0.003*	-0.003*
	(0.073)	(0.079)
lev	0.026**	0.025**
	(0.021)	(0.016)
roa	-0.0300	-0.0220
	(0.300)	(0.429)
age	-0.027***	-0.023***
	(0.000)	(0.000)
boardsize	-0.022**	-0.040***
	(0.025)	(0.000)
balance	0.001	0.003
	(0.717)	(0.398)
dual	0.023***	0.022***
	(0.000)	(0.000)
first	-0.043**	-0.029*
	(0.012)	(0.058)
_cons	0.238***	0.120***
	(0.000)	(0.008)
industry	yes	yes

year	yes	yes
N	13429	17071
Adj_R2	0.122	0.115

Note: p-values in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Chapter 6 Further Study

The Value-Enhancing Effect of Board Heterogeneity

As previously stated, board heterogeneity has a positive impact on a company's international strategy. The question now is whether this positive impact increases company value. We conducted an empirical test to answer this question. We used Tobin's Q to measure company value and a stepwise approach to test the path by which board heterogeneity affects company value through international strategies, in accordance with the existing literature. The test results are presented in Table 12, which shows that board heterogeneity increases company value (the coefficient of Blau in column (1) is 0.090 and significant at the 1% level), whereas companies' international strategy acts as a mediator between board heterogeneity and company value (the results of Blau and inter in column (3) are both strongly positive).

Table 12

Results of the Value-Enhancing Effect of Board Heterogeneity

	(1)	(2)	(3)
	TobinQ	inter	TobinQ
Blau	0.090***	0.019***	0.084***
	(0.000)	(0.000)	(0.001)
inter			0.294***
			(0.000)
size	-0.392***	-0.003**	-0.391***
	(0.000)	(0.049)	(0.000)
lev	-0.132**	0.022**	-0.138**
	(0.015)	(0.028)	(0.011)
roa	4.083***	-0.0360	4.094***
	(0.000)	(0.188)	(0.000)
age	0.314***	-0.022***	0.321***
	(0.000)	(0.000)	(0.000)
boardsize	-0.182***	-0.031***	-0.173***
	(0.000)	(0.001)	(0.000)
balance	0.034*	0.00300	0.033*

	(0.076)	(0.392)	(0.084)
dual	0.065***	0.023***	0.058***
	(0.000)	(0.000)	(0.001)
first	0.268***	-0.030*	0.277***
	(0.001)	(0.050)	(0.001)
_cons	9.708***	0.214***	9.645***
	(0.000)	(0.000)	(0.000)
industry	yes	yes	yes
year	yes	yes	yes
N	17071	17071	17093
Adj_R2	0.3152	0.1192	0.3174

Note: p-values in parentheses
* p<0.1, ** p<0.05, *** p<0.01

The Impact of Different Dimensions of Board Heterogeneity on Companies' International Strategies

We have examined the beneficial effect of board diversity on companies' international strategies. Board heterogeneity, on the other hand, can be divided into two types: relational heterogeneity and task heterogeneity. Relational heterogeneity is caused by demographic differences such as age and gender, whereas task heterogeneity is caused by differences in directors' education, professional background, tenure, and so on. This section delves into how relational and task heterogeneity affect companies' international strategies. The relational heterogeneity index (blau_gx) and task heterogeneity index (blau_task) have been developed and implemented in the test model. As shown in Table 13, the coefficient of blau_gx is insignificant, whereas the coefficient of blau_task is significantly positive at the 1% level, implying that the impact of board heterogeneity on international strategies is primarily due to differences in directors' education level, professional background, and tenure.

Table 13

The Impact of Different Dimensions of Board Heterogeneity on Companies' International Strategies

	model1	model2
blau_gx	0.059	
	(0.124)	
blau_task		0.111***
		(0.000)
size	-0.392***	-0.393***
	(0.000)	(0.000)
lev	-0.135**	-0.134**
	(0.013)	(0.014)
roa	4.058***	4.083***
	(0.000)	(0.000)
age	0.316***	0.312***
	(0.000)	(0.000)
boardsize	-0.167***	-0.180***
	(0.001)	(0.000)
balance	0.035*	0.033*
	(0.070)	(0.089)
dual	0.068***	0.066***
	(0.000)	(0.000)
first	0.268***	0.265***
	(0.001)	(0.001)
_cons	9.847***	9.770***
	(0.000)	(0.000)
industry	yes	yes
year	yes	yes
N	17071	17071
Adj_R2	0.315	0.315

Note: p-values in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Chapter 7 Conclusions and Implications

Conclusions

The purpose of the research is to explore whether the impact of board members' diverse composition in terms of gender, age, education level, professional background, and tenure on companies' international strategies varies across contexts. The paper develops indicators of board heterogeneity and employs the Blau index to assess board member differences in the aforementioned areas. The data of Chinese listed companies are used for empirical analysis and robustness tests, and the paper's main findings are as follows.

First, board heterogeneity has a positive impact on companies' international strategies. The main reason for this is that a heterogeneous board of directors can generate diverse viewpoints and analyze problems from various perspectives during the decision-making process. Moreover, directors with mixed backgrounds can bring diverse information and resources to the company, which aids in the implementation of international strategies. Furthermore, our mechanism analysis suggests that board heterogeneity increases a company's risk-bearing capacity. Given that international strategy is a risky decision, board heterogeneity promotes it by making companies more risk-averse.

Second, the impact of board heterogeneity on international strategies varies depending on the context. (1) At the individual level, we found that when the board is chaired by a woman, board heterogeneity is more effective in driving companies' international strategies. This is because female chairmen are more socially adept than male chairmen, putting them in a good position to integrate and promote the

information and resources of diverse board members for the implementation of companies' international strategies. It has also been found that the longer the chairman's tenure, the greater the contribution of board heterogeneity to companies' international strategies, as the chairman has more authority in the board and can effectively pull together information and resources from heterogeneous board members, which can be beneficial to carrying out international strategies. (2) We found that the richer a company's slack resources, the greater the effect of board heterogeneity on its international strategies. A company's international strategy, as a risky strategic decision, necessitates diverse information from the board to avoid risks, as well as its resources to ensure that strategy. Therefore, when companies have more slack resources, board heterogeneity has a greater impact on international strategy. Furthermore, the effect of board heterogeneity is more pronounced in SOEs. This is because the Chinese government is actively promoting the Belt and Road Initiative, and SOEs, as government-controlled enterprises, are motivated to follow national policy; thus, board heterogeneity in SOEs has a greater impact on international strategies. (3) At the environmental level, the greater the external environment's dynamics, the more important the role of board heterogeneity in promoting international strategies. Companies must make strategic changes to meet the dynamic nature of the environment in an ever-changing environment, and international strategy is an important choice for a company. Accordingly, when external dynamics are stronger, the impact of board heterogeneity on international strategies is more visible. Furthermore, the greater the degree of marketization, the greater the effect of board heterogeneity on

international strategies. As a favorable institutional environment ensures that companies carry out their international strategies, board heterogeneity appears to facilitate companies' international strategies.

Third, board heterogeneity helps foster company value by enhancing international strategies. Because the resources and information brought by board heterogeneity can reduce uncertainty and risk in developing international strategies, such strategies are decisions that take into account both internal and external circumstances, which will improve company value in the long run.

Finally, the effects of different dimensions of board heterogeneity on international strategies vary. After subdividing board heterogeneity into two categories, we found that relational heterogeneity, which is based on demographic differences such as age and gender, has no significant impact on companies' international strategies. Although task heterogeneity is caused by cognitive differences in directors' education level, professional background, and tenure, it is the primary contributor to a company's international strategy. This also gives us ideas for improving the board structure.

Contributions and Implications

Contributions

This study's theoretical contributions are primarily reflected in three aspects:

First, this study adds to and expands on previous research on board heterogeneity. Although there are many studies on board heterogeneity, as we discussed in the literature review section, nearly 80% of the literature focuses on the gender and ethnic heterogeneity of the board of directors, with less emphasis on

the educational background, professional background, age structure, and other aspects of board members. This paper's definition of board heterogeneity includes gender, age, education level, professional background, tenure, and other factors that can accurately reflect the heterogeneity of board members. In addition, on the basis of comprehensive consideration of board heterogeneity, we further classify board heterogeneity into relationship heterogeneity and task heterogeneity, and find that the impact of board heterogeneity on corporate internationalization strategy is primarily based on task heterogeneity rather than relationship heterogeneity, which enriches and expands the research in this field.

Second, this study can help us better understand the impact of board diversity on corporate decision-making. Although previous research has found that board heterogeneity has a positive impact on corporate performance, it has not been considered in the important strategic decision of corporate internationalization. This study theoretically discusses the mechanism of board heterogeneity's impact on corporate internationalization, as well as the fact that board heterogeneity promotes corporate internationalization strategy by increasing corporate risk-taking, which enriches and expands the literature in this field.

Third, this study explored into the contextual factors that affect board heterogeneity and the company's internationalization strategy. We summarized the factors that affect the relationship between the heterogeneity of the board of directors and the company's internationalization strategy at the individual, organizational, and environmental levels, and proposed a comprehensive analysis framework with guiding significance for future research.

Implications

To begin with, the global diversification trend has resulted in increasingly fierce market competition. In order to win in the complex and dynamic market, many companies have begun pursuing the "going global" strategy i.e., to launch international operations. The board of directors, as the core of corporate governance, plays an important role in companies' international strategies, and we found that board heterogeneity has a positive impact on international strategies. Companies that intend to launch or have already launched an international strategy can avoid potential risks in international competition by forming a diverse board of directors and utilizing the information and resources brought by board members who differ in gender, age, education level, professional background, and tenure. In particular, concerning cognitive heterogeneity in education level, professional background, and tenure, stakeholders must capitalize on their positive impact on international strategies.

Second, while improving the board structure, consideration should be given to the company's factors at the individual, organizational, and environmental levels. This study finds that when the chairman is female and when the chairman's tenure is longer, the positive effect of board heterogeneity is more notable on companies' international strategies. In addition, slack resources, the nature of property rights, external dynamics, and the degree of marketization all contribute to the impact of board heterogeneity on international strategies. As a result, companies should pay attention to factors at the individual, organizational, and environmental levels in order to focus the benefits of board heterogeneity on international strategies.

Third, because international strategies influenced by board heterogeneity have been shown to increase company value, companies interested in exploring overseas markets and pursuing international strategies should fully utilize the active role of board heterogeneity to increase company value.

Limitations and Prospects

The research limitations are two-fold: First, while some indicators for measuring board heterogeneity have been developed, such as gender, age, education level, professional background, and tenure of directors, these factors cannot fully describe board heterogeneity. Differences between board members, such as cultures and beliefs, are not assessed because they cannot be measured. This may not completely reveal the nature of the measurement. Second, because our research sample consists of Chinese publicly traded companies, the results may be somewhat limited. The validity of these findings needs to be investigated further, particularly for mature economies. However, we believe that the lessons learned from Chinese publicly traded companies can be applied to other emerging economies.

Second, international income is used to assess the company's internationalization strategy. However, it is undeniable that the international income of many companies has remained stable for a long time. At the same time, the boards of directors of these companies are relatively stable, with only minor variations in the degree of heterogeneity. In empirical analysis, proving the causal relationship between the two is difficult. Despite changing the internationalization strategy measurement method, such as changing the company's international

income from 0 to 1, the Change model, we are still unable to solve this problem effectively.

Third, our research sample consists of Chinese publicly traded companies, so our conclusions may be limited. Whether these conclusions are correct, particularly for mature economies, requires further investigation. However, we believe that the conclusions based on China's publicly traded companies can be used as a model for other emerging economies.

On the one hand, we will do our best in future research to collect data to improve measurements of board heterogeneity, including differences in culture, beliefs, and other aspects of board members. We will also discuss how to focus the company's internationalization strategy measurement. On the other hand, we will also analyze data from multiple countries to make our research conclusions more general. In addition, we will analyze other mechanisms by which board heterogeneity affects corporate internationalization strategy.

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